Access DB# 175231

SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: Nicholas Deden JR Examiner #: 71646 Date: 12/28/05
Art Unit: 1751 Phone Number 30 2/322 Serial Number: 10/006,368
Mail Box and Bldg/Room Location: 9A31 Results Format Preferred (circle): PAPER DISK E-MAIL
Remsen 9A31

If more than one search is submitted, please prioritize searches in order of need.

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Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

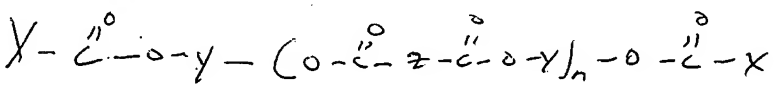
Title of Invention: Esters and Ester Composition

Inventors (please provide full names): Jos Van Lint ET AL (See BIB sheet)

Earliest Priority Filing Date: 06/09/1999

**For Sequence Searches Only* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.*

Please Search the formula according to Claim 19.



Search: fluid or heat transfer or lubricant or oil
Terms

SCIENTIFIC REFERENCE BR
Sci & Tech Inf. Ctr
DEC 28 RECD
Pat. & T.M. Office

X = aliphatic 5-11 carbons

Y = alkylene 4-6 carbons

Z = Sat Linear aliphatic 4 carbons

n = 1.5 - 10

Thanks, Nick

****

STAFF USE ONLY	Type of Search	Vendors and cost where applicable
Searcher: EJ	NA Sequence (#)	STN
Searcher Phone #:	AA Sequence (#)	Dialog
Searcher Location:	Structure (#)	Questel/Orbit
Date Searcher Picked Up:	Bibliographic	Dr.Link
Date Completed: 12-30-05	Litigation	Lexis/Nexis
Searcher Prep & Review Time:	Fulltext	Sequence Systems
Clerical Prep Time:	Patent Family	WWW/Internet
Online Time:	Other	Other (specify)

PTO-1590 (8-01)

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L4           752 S AKEN ?/AU OR VAN AKEN ?/AU
L5             1 S L2 AND L3 AND L4
               SEL RN

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L9             1 S E11

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L15        25101 S ((GEAR? OR ENGINE# OR CRANKCASE? OR MOTOR# OR TRANSMISS
L16        35810 S METALWORK? OR METAL?(2A)(WORK? OR CUT OR CUTS OR CUTTIN
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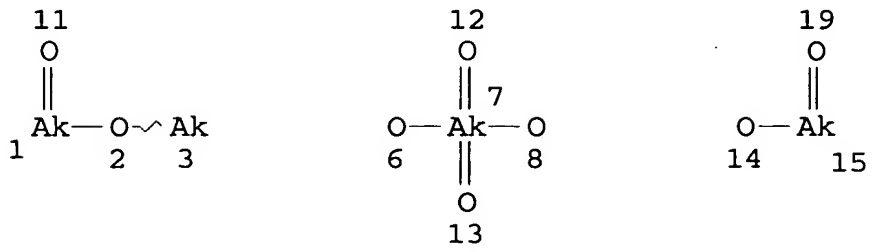


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GGCAT   IS SAT  AT   1
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GGCAT   IS SAT  AT   7
GGCAT   IS SAT  AT  15
DEFAULT ECLEVEL IS LIMITED
ECOUNT  IS M6 C  AT   1
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GRAPH ATTRIBUTES:
RING(S) ARE ISOLATED OR EMBEDDED
NUMBER OF NODES IS  12

STEREO ATTRIBUTES: NONE
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100.0% PROCESSED  200345 ITERATIONS                    13 ANSWERS
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=> d l51 1-7 cbib abs hitstr hitind

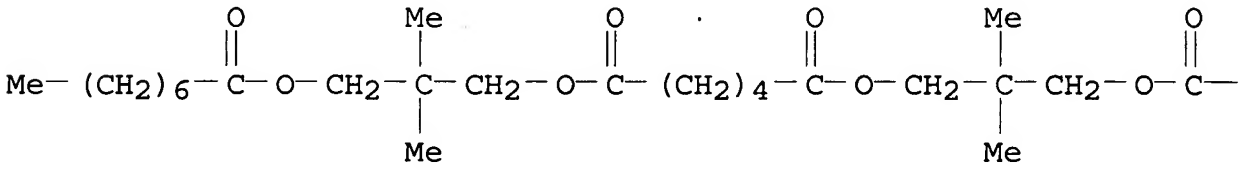
L51 ANSWER 1 OF 7 HCA COPYRIGHT 2005 ACS on STN
133:32586 Neopentyl glycol-octanoic acid-based esters as synthetic **lubricating** oils for compressors using R-134a refrigerant.
Kim, Jong-ho; Jong, Kun-u; Han, Du-hui (Korea Research Institute of Chemical Technology, S. Korea). Repub. Korea KR 9505692 B1 **19950529**, No pp. given (Korean). CODEN: KRXXFC.
APPLICATION: KR 1991-20214 19911114.

AB A **lubricating** oil for a home refrigerator using R-134a (1,1,1,2-tetrafluoroethane) as a substitute refrigerant is a mixt. of neopentyl glycol dicaprylate and di(neopentyl glycol monocaprylate) adipate, at a 4:1-6 wt. ratio, with a dynamic viscosity of 35 cSt at 40.degree.. The mixt. is produced by reacting adipic acid with neopentyl glycol, followed by reaction with caprylic acid. The **lubricating** oil had good heat and oxidn. stabilities and abrasion resistance.

IT **273738-59-3P**
(synthetic **lubricating** oils contg.; neopentyl glycol-octanoic acid-based esters as synthetic **lubricating** oils for compressors using R-134a refrigerant)

RN 273738-59-3 HCA
CN Hexanedioic acid, bis[2,2-dimethyl-3-[(1-oxooctyl)oxy]propyl] ester (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B

— $(CH_2)_6$ — Me

IC ICM C10M105-32
ICS C10M111-02
CC 51-8 (Fossil Fuels, Derivatives, and Related Products)

ST compressor synthetic **lubricating** oil refrigerator; neopentyl glycol caprylate ester refrigerator **lubricating** oil

IT **Lubricating** oils
(base oils, synthetic, ester-based, for refrigerators; neopentyl glycol-octanoic acid-based esters as synthetic **lubricating** oils for compressors using R-134a refrigerant)

IT **Lubricating** oils
(compressor, ester-based base oils, for refrigerators; neopentyl glycol-octanoic acid-based esters as synthetic **lubricating** oils for compressors using R-134a refrigerant)

IT Refrigerating apparatus
(neopentyl glycol-octanoic acid-based esters as synthetic **lubricating** oils for compressors using R-134a refrigerant)

IT 811-97-2, R-134a
(neopentyl glycol-octanoic acid-based esters as synthetic **lubricating** oils for compressors using R-134a refrigerant)

IT 31335-74-7P, Neopentyl glycol dioctanoate **273738-59-3P**
(synthetic **lubricating** oils contg.; neopentyl glycol-octanoic acid-based esters as synthetic **lubricating** oils for compressors using R-134a refrigerant)

L51 ANSWER 2 OF 7 HCA COPYRIGHT 2005 ACS on STN

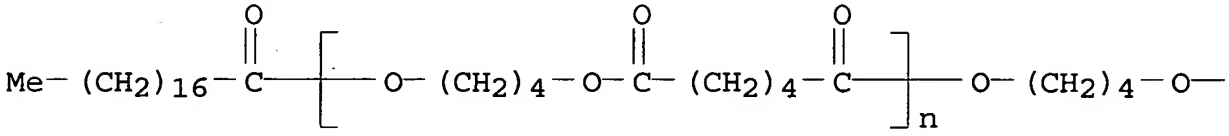
125:116336 Vinyl chloride-based polymer compositions with good fluidity and moldability for heat-resistant moldings. Nakamura, Hironobu; Kato, Masaharu; Kakei, Hiroshi (Sekisui Chemical Co. Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 08113684 A2 **19960507** Heisei, 6 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1994-253538 19941019.

AB The title compns., useful for building materials, comprise (A) 100 parts vinyl chloride-based polymers, (B) 0.1-20 parts polyesters (OH value <3; av. mol. wt. 1000-3000) obtained from polyester diols (prepd. from satd. dibasic acids and .alpha.,.omega.-diols) and linear fatty acids, and optionally (C) 0.1-5 parts thermally decomposable blowing agents. Thus, a compn. contg. PVC 100, a polyester (prepd. from adipic acid, 1,4-butanediol, and stearic acid; OH value 1 mg KOH/g; av. mol. wt. 1800) 1, Sn-based stabilizer 1, acrylic processing aid 0.5, CaCO3 3, polyethylene wax 1, and ester-based **lubricant** 0.3 part was extruded to give a molding having Vicat softening temp. 82.degree. and good appearance.

IT **179190-11-5**
(vinyl chloride polymer-polyester blends with good fluidity and moldability for heat-resistant moldings)

RN 179190-11-5 HCA
CN Poly[oxy-1,4-butanediyloxy(1,6-dioxo-1,6-hexanediyl)], .alpha.-(1-oxooctadecyl)-.omega.-[4-[(1-oxooctadecyl)oxy]butoxy]- (9CI) (CA INDEX NAME)

PAGE 1-A



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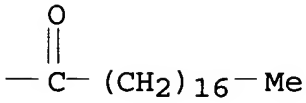

IC ICM C08L027-06
ICA C08G063-16
ICI C08L027-06, C08L067-02
CC 37-6 (Plastics Manufacture and Processing)
IT **179190-11-5** 179190-12-6 179464-02-9 179464-03-0
(vinyl chloride polymer-polyester blends with good fluidity and moldability for heat-resistant moldings)

L51 ANSWER 3 OF 7 HCA COPYRIGHT 2005 ACS on STN
122:318456 Refrigeration working fluid containing complex ester and tetrafluoroethane. Antika, Shlomo; Dietz, Thomas G.; Schlosberg, Richard H.; Turner, David W.; Weisgerber, George A. (Exxon Research and Engineering Co., USA). U.S. US 5391313 A **19950221**, 5 pp. Cont.-in-part of U.S. Ser. No. 811,448, abandoned. (English). CODEN: USXXAM. APPLICATION: US 1993-42031 19930402. PRIORITY: US 1991-811448 19911219.
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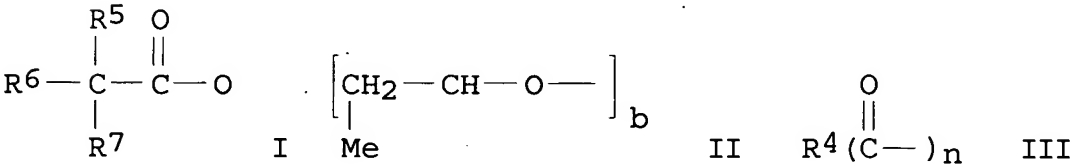


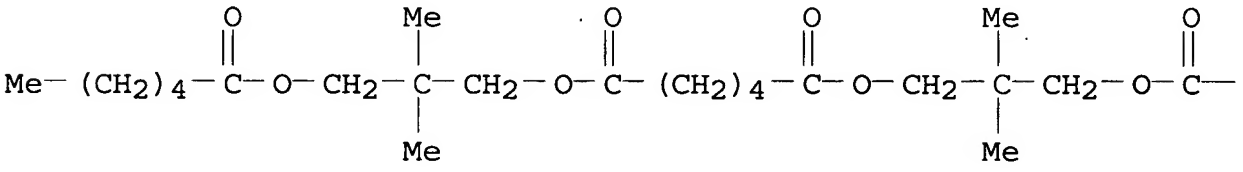
AB A refrigerator working fluid which comprises (a) tetrafluoroethane, and (b) a synthetic ester **lubricant** with a viscosity of .apprx.150 cSt or less at 40.degree. and having the formula (R1 -R2)n R3 wherein R1 is I in which R5, R6 and R7 are each independently C1-7 hydrocarbyl group with the proviso that the sum of carbon atoms in R5 and R6 and R7 is from 3 to 9, R2 is selected from the group consisting of (CH2CH2O)b, II and mixts. thereof, where b is an integer of 1-3, R3 is a monobasic or polybasic carboxylic acid radical of the formula III where R4 is a C1-9 hydrocarbyl , and n is an integer of 1-4.

IT **96374-45-7**
(refrigeration working fluid contg. complex ester and tetrafluoroethane)

RN 96374-45-7 HCA

CN Hexanedioic acid, bis[2,2-dimethyl-3-[(1-oxohexyl)oxy]propyl] ester (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B

— $(CH_2)_4$ — Me

IC ICM C10M105-18
ICS C09K005-00

INCL 252068000

CC 51-8 (Fossil Fuels, Derivatives, and Related Products)

ST refrigerant **lubricant**

IT **96374-45-7**
(refrigeration working fluid contg. complex ester and tetrafluoroethane)

L51 ANSWER 4 OF 7 HCA COPYRIGHT 2005 ACS on STN

118:257906 **Lubricating** oils for refrigerator compressors. Fujii, Katsuhiro; Izumi, Masao; Nakahara, Makoto (Sanken Kako Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 04198394 A2 **19920717** Heisei, 4 pp. (Japanese). CODEN: JKXXAF.

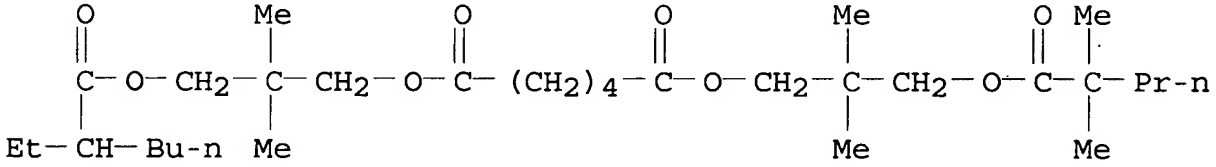
APPLICATION: JP 1990-328184 19901127.

AB Synthetic esters of the formula R1COOR2O(OCR3COOR4O)nOCR5 [R1 and R5 are a combination of neocarboxylic acid residual group (A) and branched fatty acid residual group (B) at the mol ratio (A)/(B) (15-85):(15-85); R2 and R4 are an aliph. diol residual group; R3 is an aliph. or aryl dicarboxylic acid residual group; n = 1-3] are useful as a base stock for the **lubricating** oil in the compressors having Fron R-134a refrigerant. Thus, a mixt. of adipic acid 146, neopentyl glycol 208, 2-ethylhexanoic acid 58 g, and 2.2-di-Me pentanoic acid 208 g was reacted with a Ti(OBu)4 catalyst to obtain an ester product, as **lubricating** base oil, with kinematic viscosity 35 cSt at 100.degree., viscosity index 120, and pour point -30.degree..

IT **148056-53-5 148056-54-6 148056-55-7**
(**lubricating** base oil, for refrigerator compressor)

RN 148056-53-5 HCA

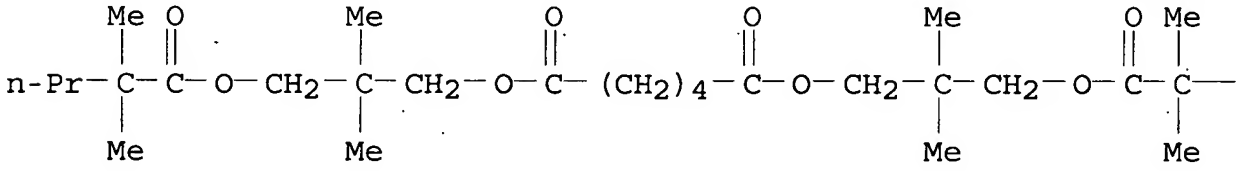
CN Hexanedioic acid, 3-[(2,2-dimethyl-1-oxopentyl)oxy]-2,2-dimethylpropyl 3-[(2-ethyl-1-oxohexyl)oxy]-2,2-dimethylpropyl ester (9CI) (CA INDEX NAME)



RN 148056-54-6 HCA

CN Hexanedioic acid, bis[3-[(2,2-dimethyl-1-oxopentyl)oxy]-2,2-dimethylpropyl] ester (9CI) (CA INDEX NAME)

PAGE 1-A

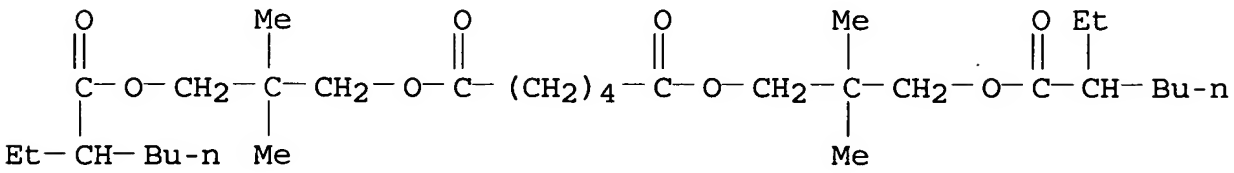


PAGE 1-B

— Pr-n

RN 148056-55-7 HCA

CN Hexanedioic acid, bis[3-[(2-ethyl-1-oxohexyl)oxy]-2,2-dimethylpropyl] ester (9CI) (CA INDEX NAME)



IC ICM C10M105-38
ICI C10N040-30
CC 51-8 (Fossil Fuels, Derivatives, and Related Products)
ST **lubricating** oil refrigerator compressor ester; fatty acid ester **lubricating** oil
IT **Lubricating** oils
(base oils, synthetic esters, for refrigerator compressors)
IT Carboxylic acids, esters
(neo-, esters, with polyhydric alc., **lubricating** base oils, for refrigerator compressors)
IT 5593-70-4, Tetrabutyl titanate
(catalyst, in prepn. of neocarboxylic acid esters, for **lubricating** base oils, for refrigerator compressor)
IT 147764-22-5 147764-23-6 147764-24-7 147764-25-8 **148056-53-5 148056-54-6 148056-55-7**
(**lubricating** base oil, for refrigerator compressor)
IT 811-97-2
(refrigerant, compressors with, **lubricating** base oil for, synthetic esters as)

L51 ANSWER 5 OF 7 HCA COPYRIGHT 2005 ACS on STN
116:63253 Refrigerator oils for use with hydrogen-containing halogenocarbon refrigerants. Hasegawa, Hiroshi; Ishida, Noboru; Sasaki, Umekichi; Ishikawa, Tatsuyuki (Nippon Oil Co., Ltd., Japan). Eur. Pat. Appl. EP 435253 A1 **19910703**, 20 pp.
DESIGNATED STATES: R: DE, DK, GB, IT. (English). CODEN: EPXXDW.
APPLICATION: EP 1990-125500 19901227. PRIORITY: JP 1989-341244 19891228; JP 1989-341245 19891228; JP 1990-105772 19900420; JP 1990-121133 19900514.
AB A refrigerator oil for use with a H-contg. halogenocarbon refrigerant comprises at least one of an ester selected from (a) a pentaerythritol ester such as an ester of pentaerythritol with a mono- or dicarboxylic acid, (b) a polyol ester such as an ester of teimethylolethane with a mono- or dicarboxylic acid, (c) a specific ester such as an ester of ethylene glycol and a dicarboxylic acid, and (d) a specific polyol ester synthesized from a neopentyl-type polyhydric alc., a monocarboxylic acid and a dicarboxylic acid. The oil has excellent compatibility with HFC-134a and a high elec.

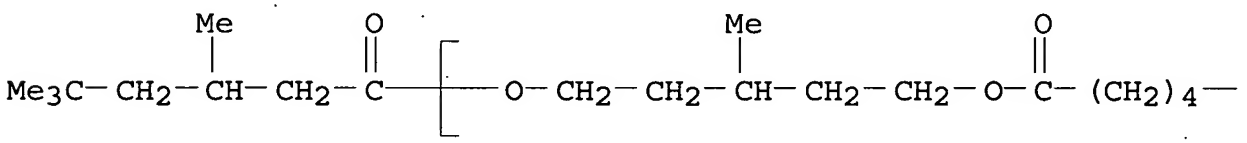
insulating property.

IT **137049-43-5**
(refrigerator oils contg., for HFC-134a refrigerant compatibility)

RN 137049-43-5 HCA

CN Poly[oxy(3-methyl-1,5-pentanediyl)oxy(1,6-dioxo-1,6-hexanediyl)], .alpha.-(3,5,5-trimethyl-1-oxohexyl)-.omega.-[[3-methyl-5-[(3,5,5-trimethyl-1-oxohexyl)oxy]pentyl]oxy]- (9CI) (CA INDEX NAME)

PAGE 1-A



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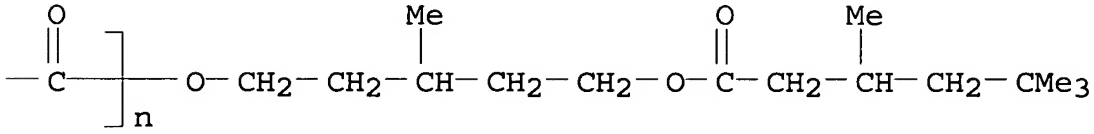

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ICS C10M105-38; C10M105-42; C10M111-04; C10M169-04; C09K005-04

ICI C10M111-04, C10M105-36, C10M105-38, C10M105-42, C10M107-34; C10M169-04, C10M105-36, C10M105-38, C10M105-42, C10M107-34, C10M129-18, C10M137-02; C10N040-30

CC 51-8 (Fossil Fuels, Derivatives, and Related Products)

ST refrigerator oil ester blend refrigerant; pentaerythritol ester refrigerator **lubricating** oil; polyol ester refrigerator oil; tetrafluoroethane refrigerant ester refrigerating oil

IT **Lubricating** oils
(for refrigerators, mixed esters as, with improved HFC-134a compabibility)

IT Refrigerating apparatus
(**lubricating** oils for, mixed esters as)

IT 77-99-6D, reaction products with succinic acid, glutaric acid, isopentanoic acid and isohexanoic acid 103-23-1 110-15-6D, Butanedioic acid, reaction products with trimethylolpropane or pentaerythritol, glutaric acid, isopentanoic acid and isohexanoic acid 110-94-1D, Glutaric acid, reaction products with trimethylolpropane or pentaerythritol, succinic acid, isohexanoic acid and isopentanoic acid 115-77-5D, Pentaerythritol, reaction products with succinic acid, glutaric acid, isopentanoic acid and isohexanoic acid 503-74-2D, Isopentanoic acid, reaction products

with trimethylolpropane or pentaerythritol, succinic acid, glutaric acid and isohexanoic acid 646-07-1D, reaction products with trimethylolpropane or pentaerythritol, succinic acid, glutaric acid and isopentanoic acid 7299-99-2 26086-33-9 41058-87-1 65870-94-2 65870-96-4 65870-97-5 **137049-43-5** 137049-44-6 137095-67-1 137098-10-3 137158-09-9 137181-74-9 137201-04-8
(refrigerator oils contg., for HFC-134a refrigerant compatibility)

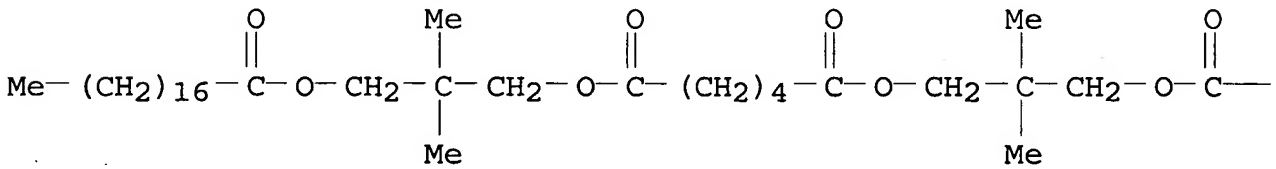
L51 ANSWER 6 OF 7 HCA COPYRIGHT 2005 ACS on STN
102:150877 **Lubricant** finishes for synthetic fibers. (Toray Industries, Inc., Japan). Jpn. Kokai Tokkyo Koho JP 59211679 A2 **19841130** Showa, 8 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1983-85689 19830518.

AB **Lubricant** finishes for synthetic fibers contg. RCO(OZO2CZ1CO)nOZOR1, where RCO is C6-30 aliph. acid residue, R1 is H or C1-30 aliph. acid residue, Z is a divalent group, Z1 is Z2SZ2, Z2OZ2, or Z3, Z2 is C1-6 alkylene, Z3 is C1-8 alkylene, and n is 1-6, the reaction product of a higher fatty acid with a polyhydric alc. and a polyalkylene glycol, and an alkylene oxide adduct with castor oil or hydrogenated castor oil and optionally contg. an alkylamine-alkylene oxide are heat-resistant. Thus, poly(ethylene terephthalate) was spun, finished with 15% emulsion contg. 60 parts H32C17CO[OCH2CMe2CH2O2C(CH2)2S(CH2)2CO]2OCH2CMe2CH2O2CC17H32 [95880-04-9] and 40 parts polyethylene glycol sorbitan ester palmitate [9005-66-7], and drawn 470% at 230.degree. to give fibers with finish content 1.0% and without fume generation.

IT **95880-02-7**
(**lubricant** finishes, contg. poly(oxyethylene) esters, heat-resistant, for synthetic fibers)

RN 95880-02-7 HCA
CN Hexanedioic acid, bis[2,2-dimethyl-3-[(1-oxooctadecyl)oxy]propyl] ester (9CI) (CA INDEX NAME)

PAGE 1-A



— $(CH_2)_{16}$ — Me

IC D06M013-16; D01F011-04; D06M013-18; D06M013-28; D06M015-10
CC 40-7 (Textiles)
ST **lubricant** finish polyester fiber; polyester fiber finishing; heat resistance **lubricant** finish; palmitic acid ester ethoxylated finish; sorbitan ester ethoxylated **lubricant** finish; polyoxyethylene palmitate ester **lubricant** finish; sulfur compd **lubricant** finish; castor oil alkoxylated **lubricant** finish; fatty acid ester oligomer finish; glycol ester oligomer finish
IT **Lubricants**
(finishes, contg. fatty acid glycol ester oligomers and poly(oxyethylene) derivs., heat-resistant, for synthetic fibers)
IT Castor oil
(hydrogenated, ethylene oxide adducts, **lubricant** finishes, contg. fatty acid glycol ester oligomers, for synthetic fibers)
IT Polyester fibers, uses and miscellaneous
(**lubricant** finishes for, contg. fatty acid glycol ester oligomers and poly(oxyethylene) derivs., heat-resistant)
IT Polyamide fibers, uses and miscellaneous
(**lubricant** finishes for, contg. fatty acid glycol ester oligomers and poly(oxyethylene) esters, heat-resistant)
IT 75-21-8D, adducts with hydrogenated castor oil 9005-66-7
(**lubricant** finishes, contg. fatty acid glycol ester oligomers, for synthetic fibers)
IT 26635-92-7
(**lubricant** finishes, contg. poly(oxyethylene) esters and fatty acid glycol ester oligomers, for synthetic fibers)
IT **95880-02-7** 95880-03-8 95880-04-9
(**lubricant** finishes, contg. poly(oxyethylene) esters, heat-resistant, for synthetic fibers)

L51 ANSWER 7 OF 7 HCA COPYRIGHT 2005 ACS on STN
59:40815 Original Reference No. 59:7296e-g Neopentyl glycol esters as **lubricating** oils. Girard, Theodore A.; Slaght, Edgar C. (Heyden Newport Chemical Corp.). US 3048608 **19620807**, 3 pp. (Unavailable). APPLICATION: US 19590318. PRIORITY: US 19590318.
AB As a synthetic **lubricating** oil suitable for both high and low temps., di(neopentyl glycol monopelargonate) azelate is prepd.

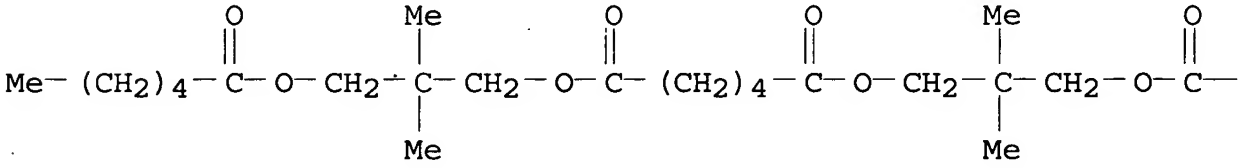
by refluxing 2 moles of neopentyl glycol with 2 moles of pelargonic acid, 4.19 g. H3PO4, 22.9 g. activated C, and 114 g. xylene for 5 hrs. The mixt. is cooled to 25.degree., 1 mole azelaic acid and 7.22 g. addnl. H3PO4 are added, and the heating is repeated. An addnl. 0.1 mole of pelargonic acid is added and the esterification continued for 6.5 hrs. at 176-81.degree.. Xylene is removed by sparging with CO2, the C by filtration, the surplus acid by washing with alc. NaOH and then with alc. NaCl, and the ester is purified by vacuum distn. The pour point is -73.degree.F. and the flash point is 459.degree.F. Similarly, di(neopentyl glycol monovalerate) azelate is prepd. from the glycol, azelaic acid, and valeric acid. Also, di(neopentyl glycol monocaproate) diglycolate is prepd. from the glycol, caproic acid, and diglycolic acid. Adipic acid, instead, yields the adipate. Also, (neopentyl glycol monovalerate) (trimethylolpropane divalerate) adipate is prepd. from the glycol, trimethylolpropane, valeric acid, and adipic acid.

IT **96374-45-7**, Hexanoic acid, 3-hydroxy-2,2-dimethylpropyl ester, diester with adipic acid
(as **lubricant**)

RN 96374-45-7 HCA

CN Hexanedioic acid, bis[2,2-dimethyl-3-[(1-oxohexyl)oxy]propyl] ester (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B

— $(CH_2)_4$ — Me

INCL 260404800

CC 27 (Petroleum and Petroleum Derivatives)

IT **Lubricants**
(esters as, from neopentyl glycol)

IT **96374-45-7**, Hexanoic acid, 3-hydroxy-2,2-dimethylpropyl ester, diester with adipic acid **96374-45-7**, Adipic acid (1,4-butanedicarboxylic acid, hexanedioic acid), bis(3-hydroxy-2,2-dimethylpropyl) ester, dihexanoate 96810-84-3,

Azelaic acid, bis(3-hydroxy-2,2-dimethylpropyl) ester, dinonanoate 96810-84-3, Nonanoic acid, 3-hydroxy-2,2-dimethylpropyl ester, diester with azelaic acid 97076-12-5, Azelaic acid, bis(3-hydroxy-2,2-dimethylpropyl) ester, divalerate 97076-12-5, Valeric acid, 3-hydroxy-2,2-dimethylpropyl ester, diester with azelaic acid 102031-64-1, Diglycolic acid, bis(3-hydroxy-2,2-dimethylpropyl) ester, dihexanoate 860387-98-0, Hexanoic acid, 3-hydroxy-2,2-dimethylpropyl ester, diester with diglycolic acid
(as **lubricant**)

IT 126-30-7, 1,3-Propanediol, 2,2-dimethyl-
(esters, **lubricants**)

=> d l52 1-13 ti

L52 ANSWER 1 OF 13 HCA COPYRIGHT 2005 ACS on STN
TI Manufacture of melt viscosity depressants and polyester compositions containing the same

L52 ANSWER 2 OF 13 HCA COPYRIGHT 2005 ACS on STN
TI Silver halide photographic material containing yellow dye image-forming coupler and high-boiling organic solvent

L52 ANSWER 3 OF 13 HCA COPYRIGHT 2005 ACS on STN
TI Silver halide color photographic material

L52 ANSWER 4 OF 13 HCA COPYRIGHT 2005 ACS on STN
TI Nonvolatile ester plasticizers for cold- and heat-resistant butadiene rubbers

L52 ANSWER 5 OF 13 HCA COPYRIGHT 2005 ACS on STN
TI Vinyl chloride polymer compositions for wire coatings

L52 ANSWER 6 OF 13 HCA COPYRIGHT 2005 ACS on STN
TI Chloroprene rubber mixture

L52 ANSWER 7 OF 13 HCA COPYRIGHT 2005 ACS on STN
TI Polyester for plasticization of poly(vinyl chloride). I. Structure identification of polyesters from adipic acid and 1,2-propylene glycol

L52 ANSWER 8 OF 13 HCA COPYRIGHT 2005 ACS on STN
TI Ester plasticizers

L52 ANSWER 9 OF 13 HCA COPYRIGHT 2005 ACS on STN
TI Oligomeric polyesters from long-chain dicarboxylic acids as plasticizers for vinyl polymers

L52 ANSWER 10 OF 13 HCA COPYRIGHT 2005 ACS on STN
TI Sulfur-containing organotin compounds

L52 ANSWER 11 OF 13 HCA COPYRIGHT 2005 ACS on STN
TI Polyester plasticizers

L52 ANSWER 12 OF 13 HCA COPYRIGHT 2005 ACS on STN
TI Oligomeric polyesters from long-chain dicarboxylic acids as plasticizers for poly(vinyl chloride)

L52 ANSWER 13 OF 13 HCA COPYRIGHT 2005 ACS on STN
TI Oligomeric plasticizers from crambe oil-derived dicarboxylic acids for poly(vinyl chloride)

=> d l52 1,9 cbib abs hitstr hitind

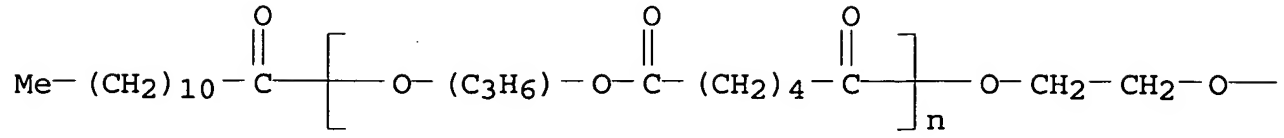
L52 ANSWER 1 OF 13 HCA COPYRIGHT 2005 ACS on STN
125:12401 Manufacture of melt viscosity depressants and polyester compositions containing the same. Urabe, Akira; Takato, Koichi; Suzuki, Osamu (Dainippon Ink & Chemicals, Japan). Jpn. Kokai Tokkyo Koho JP 08034904 A2 **19960206** Heisei, 7 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1995-103723 19950427. PRIORITY: JP 1994-100946 19940516.

AB Title depressants, useful for polyester (for melt spinning), are low-viscosity liq. (25.degree.) or high-melting-point solid polyesters with acid value (A) .ltoreq.1.0, OH value (B) .ltoreq.5.0 and volatility (C; at 300.degree.) .ltoreq.3%. Thus, 0.05 g octyltin oxide was added at 130.degree. under N into a mixt. contg. di-Me terephthalate 135.8, 1,4-cyclohexanedicarboxylic acid 51.6, 1,4-butanediol 81, and 2-ethylhexanol 91 g, heated to 220.degree. over 4 h with removal of MeOH and H2O, kept for 4 h, and excess alcs. were removed at 5 mm Hg to obtain 235 g polyester (A 0.5, B 0.6, C 0.8%, m.p. 110-170.degree.), 5 g of which was blended with 100 g powd. PET and pelletized to show melt viscosity 286 P at 270.degree., compared with 998 P for the pelletized PET alone.

IT **54999-10-9P**
(melt viscosity depressant; for melt processing polyester compns.)

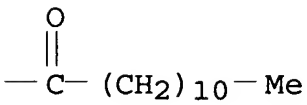
RN 54999-10-9 HCA
CN Poly[oxy(methyl-1,2-ethanediyl)oxy(1,6-dioxo-1,6-hexanediyl)], .alpha.-(1-oxododecyl)-.omega.-[methyl-2-[(1-oxododecyl)oxy]ethoxy]- (9CI) (CA INDEX NAME)

PAGE 1-A



D1—Me

PAGE 1-B

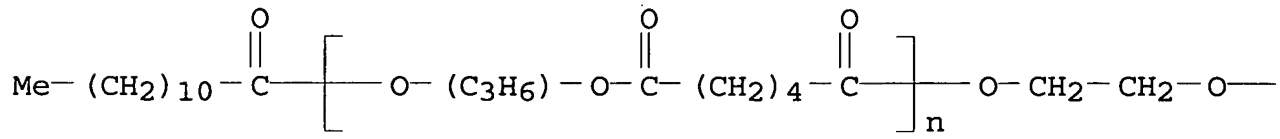


IC ICM C08L067-00
ICS C08L067-00; C08K005-10; D01F006-92
CC 37-6 (Plastics Manufacture and Processing)
Section cross-reference(s): 40
IT **54999-10-9P** 66456-53-9P 173326-89-1P 173326-90-4P
173326-91-5P 177190-10-2P 177317-11-2P 177317-12-3P
177317-13-4P 177317-14-5P
(melt viscosity depressant; for melt processing polyester compns.)

L52 ANSWER 9 OF 13 HCA COPYRIGHT 2005 ACS on STN
87:85832 Oligomeric polyesters from long-chain dicarboxylic acids as plasticizers for vinyl polymers. Chang, Shu-Pei; Ridgway, Robert W. (United States Dept. of Agriculture, USA). U.S. US 4029627 **19770614**, 4 pp. (English). CODEN: USXXAM. APPLICATION: US 1976-754940 19761228.
AB Oligomeric polyesters were prepd. from long-chain dicarboxylic acids, propylene glycol (I) [57-55-6] and a monocarboxylic acid or monoalc. terminator, and were used as plasticizers for PVC [9002-86-2]. Thus, brassylic acid 0.4, I 0.8 and lauric acid [143-07-7] 0.4 mol in 50 mL PhMe contg. 0.15 g ZnCl2 was heated under N and worked up to form an oligomeric laurate copolymer (II) [54951-94-9] with acid value 5, hydroxyl value 16, Brookfield viscosity 246 cP and Gardner color 2. PVC films plasticized with II had tensile strength 2715 psi, ultimate elongation 290%, 100% modulus 1470 psi and heat stability 7 h, compared with 2890 psi, 270%, 1260 psi and 6.4 h for PVC films plasticized with dioctyl phthalate.

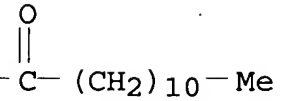
IT **54999-10-9P**
(prepn. of)
RN 54999-10-9 HCA
CN Poly[oxy(methyl-1,2-ethanediyl)oxy(1,6-dioxo-1,6-hexanediyl)], .alpha.-(1-oxododecyl)-.omega.-[methyl-2-[(1-oxododecyl)oxy]ethoxy]- (9CI) (CA INDEX NAME)

PAGE 1-A



D1—Me

PAGE 1-B



IC C08K005-10
INCL 260031600
CC 36-6 (Plastics Manufacture and Processing)
IT **54999-10-9P**
(prepn. of)

=> d l53 1-16 cbib abs hitstr hitind

L53 ANSWER 1 OF 16 HCA COPYRIGHT 2005 ACS on STN
134:44351 Refrigerator **lubricant** composition comprising an aliphatic substituted naphthalene with carbon dioxide as refrigerant. Tolfa, John C.; Rajewski, Thomas E. (Lubrizol Corp., USA). PCT Int. Appl. WO 2000075265 A1 20001214, 44 pp. DESIGNATED STATES: W: AU, CA; RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE. (English). CODEN: PIXXD2. APPLICATION: WO 2000-US13796 20000518. PRIORITY: US 1999-325136 19990603.
AB A **lubricant**-refrigerant compn. for a compression refrigeration system is disclosed which comprises (A) carbon dioxide refrigerant, and (B) a **lubricant** of an aliph. naphthalene.

A supplemental **lubricant** comprising at least one alkyl benzene, a hydrocarbon, a polyalkylene glycol, a polyol ester or a polyvinyl ether may also be present. Addnl., a performance additive comprising an alkoxylated alc. or phenol, an alkoxylated glycol, an alkyl phenol or a phosphorus compd. may also be present.

IT **124-04-9**, Adipic acid, reactions **124-07-2**, Octanoic acid, reactions **126-30-7**, Neopentyl glycol **334-48-5**, Decanoic acid
(refrigerator **lubricant** compn. comprising an aliph. substituted naphthalene with carbon dioxide as refrigerant)

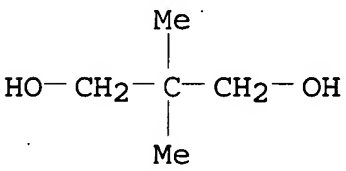
RN 124-04-9 HCA
CN Hexanedioic acid (9CI) (CA INDEX NAME)

$HO_2C-(CH_2)_4-CO_2H$

RN 124-07-2 HCA
CN Octanoic acid (8CI, 9CI) (CA INDEX NAME)

$HO_2C-(CH_2)_6-Me$

RN 126-30-7 HCA
CN 1,3-Propanediol, 2,2-dimethyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 334-48-5 HCA
CN Decanoic acid (8CI, 9CI) (CA INDEX NAME)

$HO_2C-(CH_2)_8-Me$

IC ICM C10M171-00
ICS C10M105-06; C10M169-04; C09K005-04; C10M169-04; C10M105-06; C10M105-06; C10M105-38; C10M107-24; C10M107-34; C10M129-10; C10M137-04; C10M137-10; C10M145-36; C10N020-00; C10N040-30

CC 51-8 (Fossil Fuels, Derivatives, and Related Products)

ST refrigerator **lubricant** substituted naphthalene

IT Alcohols, uses
(polyhydric, esters; refrigerator **lubricant** compn. comprising an aliph. substituted naphthalene with carbon dioxide as refrigerant)

IT Esters, uses
(polyhydric; refrigerator **lubricant** compn. comprising an aliph. substituted naphthalene with carbon dioxide as refrigerant)

IT **Lubricants**
Refrigerating apparatus
(refrigerator **lubricant** compn. comprising an aliph. substituted naphthalene with carbon dioxide as refrigerant)

IT Hydrocarbons, uses
Polyoxyalkylenes, uses
(refrigerator **lubricant** compn. comprising an aliph. substituted naphthalene with carbon dioxide as refrigerant)

IT Carboxylic acids, reactions
(refrigerator **lubricant** compn. comprising an aliph. substituted naphthalene with carbon dioxide as refrigerant)

IT 124-38-9, Carbon dioxide, uses
(refrigerant; refrigerator **lubricant** compn. comprising an aliph. substituted naphthalene with carbon dioxide as refrigerant)

IT 71-43-2D, Benzene, alkyl derivs., uses
(refrigerator **lubricant** compn. comprising an aliph. substituted naphthalene with carbon dioxide as refrigerant)

IT 50-70-4, Sorbitol, reactions 56-81-5, Glycerol, reactions 57-11-4, Stearic acid, reactions 57-55-6, Propylene glycol, reactions 64-19-7, Acetic acid, reactions 77-99-6, Trimethylolpropane 78-24-0, Tri pentaerythritol 79-09-4, Propionic acid, reactions 88-09-5, 2-Ethylbutanoic acid 88-99-3, Phthalic acid, reactions 91-20-3D, Naphthalene, aliph. derivs., reactions 107-21-1, Ethylene glycol, reactions 107-88-0, 1,3-Butanediol 107-92-6, Butyric acid, reactions 109-52-4, Valeric acid, reactions 110-15-6, Succinic acid, reactions 110-16-7, Maleic acid, reactions 110-63-4, 1,4-Butanediol, reactions 111-14-8, Heptanoic acid 111-46-6, Di ethylene glycol, reactions 112-05-0, Nonanoic acid 112-27-6, Tri ethylene glycol 112-85-6, Behenic acid 115-77-5, Mon o pentaerythritol, reactions **124-04-9**, Adipic acid, reactions **124-07-2**, Octanoic acid, reactions **126-30-7**, Neopentyl glycol 126-58-9, Di pentaerythritol 128-37-0, BHT, reactions 142-62-1, Hexanoic acid, reactions 143-07-7, Lauric acid, reactions 144-19-4, 2,2,4-Trimethyl-1,3-pentanediol 149-57-5, 2-Ethylhexanoic acid **334-48-5**, Decanoic acid 584-03-2, 1,2-Butanediol 1330-78-5, Tricresyl phosphate 3302-10-1, 3,5,5-Trimethylhexanoic acid 4536-23-6, 2=Methyl hexanoic acid 9002-93-1, Triton X-45 25013-16-5, BHA 25103-52-0, Isooctanoic acid 25265-71-8, Di propylene glycol 25354-97-6, 2-Hexyl decanoic acid 26896-18-4, Isononanoic acid 26896-20-8, Neodecanoic acid 30399-84-9, Isostearic acid 33113-10-9, Neoheptanoic acid 36675-34-0, Hexaglycerol 56090-54-1, Tri

glycerol 129291-65-2, Irgalube TPPT 198840-84-5, MCP-917
(refrigerator **lubricant** compn. comprising an aliph. substituted naphthalene with carbon dioxide as refrigerant)

L53 ANSWER 2 OF 16 HCA COPYRIGHT 2005 ACS on STN
134:44350 New esters and ester compositions. Hoogendoorn, Ronald; Lint, Jos-Van; Steverink-de-Zoete, Marian; Aken, Ron-Van (Imperial Chemical Industries Plc, UK). PCT Int. Appl. WO 2000075100 A1 20001214, 11 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG. (English). CODEN: PIXXD2. APPLICATION: WO 2000-GB2207 20000607. PRIORITY: EP 1999-111209 19990609.

AB The invention relates to new esters and ester compns. based on a polyol, a dicarboxylic acid and a monocarboxylic acid, a process for their prepn. and their use in **hydraulic fluids** and **metal working** fluids. The new esters and ester compns. have improved clean burning and **lubricity** properties when used in/as **metal working** fluids, esp. rolling fluids. The new esters and ester compns. have improved biodegradability and thermal and oxidative stability properties when used in/as **hydraulic fluids.**

IT **124-04-9**, Adipic acid, reactions **124-07-2**, Octanoic acid, reactions **126-30-7**, Neopentyl glycol **334-48-5**, Decanoic acid
(new esters and ester compns. as **antioxidants** for **lubricants**)

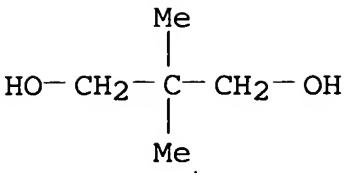
RN 124-04-9 HCA
CN Hexanedioic acid (9CI) (CA INDEX NAME)

$HO_2C-(CH_2)_4-CO_2H$

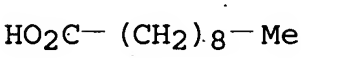
RN 124-07-2 HCA
CN Octanoic acid (8CI, 9CI) (CA INDEX NAME)

$HO_2C-(CH_2)_6-Me$

RN 126-30-7 HCA
CN 1,3-Propanediol, 2,2-dimethyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 334-48-5 HCA
CN Decanoic acid (8CI, 9CI) (CA INDEX NAME)



IC ICM C07C069-34
ICS C07C069-44; C10M105-44; C07C067-08
CC 51-8 (Fossil Fuels, Derivatives, and Related Products)
ST **hydraulic fluid antioxidant**
biodegradable; **metalworking** fluid **antioxidant**
biodegradable
IT **Lubricating** oils
(**metalworking**; new esters and ester compns. as **antioxidants** for **lubricants**)
IT **Hydraulic fluids**
(new esters and ester compns. as **antioxidants** for **lubricants**)
IT 103-24-2, Di-2-ethylhexyl azelate 111-46-6, Diethylene glycol, reactions **124-04-9**, Adipic acid, reactions **124-07-2**, Octanoic acid, reactions **126-30-7**, Neopentyl glycol **334-48-5**, Decanoic acid 5593-70-4, Tetrabutyl titanate
(new esters and ester compns. as **antioxidants** for **lubricants**)

L53 ANSWER 3 OF 16 HCA COPYRIGHT 2005 ACS on STN
133:76474 **Lubricating** oil compositions for refrigerator using R-134a refrigerant. Kim, Jong-ho; Han, Du-hui; Park, Mi-son (Korea Research Institute of Chemical Technology, S. Korea). Repub. Korea KR 9505693 B1 **19950529**, No pp. given (Korean). CODEN: KRXXFC. APPLICATION: KR 1991-20215 19911114.
AB The prodn. of a cooling **lubricant** for use in home refrigerators using R-134a (1,1,1,2-tetrafluoroethane) as a substitute refrigerant involves reacting adipic acid with neopentyl glycol to obtain a dineopentyl glycol adipate, reacting the dineopentyl glycol adipate with caprylic acid to obtain a mixed product of a neopentyl glycol caprylate and a di(neopentyl glycol monocaprylate) adipate as the cooling **lubricant.** The mixed product has about a 35 cst dynamic viscosity at 40.degree.C.

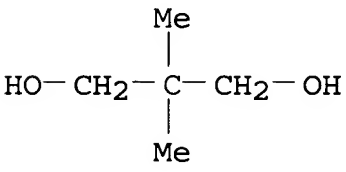
IT **124-04-9**, Adipic acid, reactions **124-07-2**,
Caprylic acid, reactions **126-30-7**, Neopentyl glycol
(**lubricating** oil compns. for refrigerator using R-134a refrigerant)
RN 124-04-9 HCA
CN Hexanedioic acid (9CI) (CA INDEX NAME)

$HO_2C-(CH_2)_4-CO_2H$

RN 124-07-2 HCA
CN Octanoic acid (8CI, 9CI) (CA INDEX NAME)

$HO_2C-(CH_2)_6-Me$

RN 126-30-7 HCA
CN 1,3-Propanediol, 2,2-dimethyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



IC ICM C10M105-32
ICS C10M111-02
CC 51-8 (Fossil Fuels, Derivatives, and Related Products)
ST **lubricant** compn refrigerator R134a neopentyl glycol adipate caprylate
IT **Lubricating** oils
Refrigerating apparatus
(**lubricating** oil compns. for refrigerator using R-134a refrigerant)
IT 31335-74-7P 278799-51-2P
(**lubricating** oil compns. for refrigerator using R-134a refrigerant)
IT **124-04-9**, Adipic acid, reactions **124-07-2**,
Caprylic acid, reactions **126-30-7**, Neopentyl glycol
(**lubricating** oil compns. for refrigerator using R-134a refrigerant)
IT 4270-74-0P
(**lubricating** oil compns. for refrigerator using R-134a refrigerant)
IT 811-97-2, R 134a
(**lubricating** oil compns. for refrigerator using R-134a refrigerant)

L53 ANSWER 4 OF 16 HCA COPYRIGHT 2005 ACS on STN
132:13708 Polyol ester distillate fuels additive. Vrahopoulou, Elisavet P.; Schlosberg, Richard Henry; Turner, David Wayne (Exxon Research and Engineering Co., USA). U.S. US 5993498 A **19991130**, 6 pp., Cont.-in-part of U.S. Ser. No. 712,889, abandoned. (English). CODEN: USXXAM. APPLICATION: US 1998-54579 19980403. PRIORITY: US 1996-712990 19960913.

AB A polyol ester distillate fuel additive exhibits improved **lubricity** and friction and wear performance. The ester has between .apprx.1% and .apprx.35% unconverted hydroxyl groups and is characterized as having a hydroxyl no. from .apprx.5 to .apprx.180.

IT **124-04-9**, Adipic acid, reactions **124-07-2**, n-Octanoic acid, reactions **126-30-7**, Neopentyl glycol **334-48-5**, n-Decanoic acid
(polyol ester distillate fuels additive)

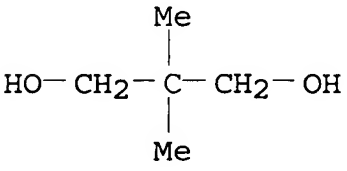
RN 124-04-9 HCA
CN Hexanedioic acid (9CI) (CA INDEX NAME)

$HO_2C-(CH_2)_4-CO_2H$

RN 124-07-2 HCA
CN Octanoic acid (8CI, 9CI) (CA INDEX NAME)

$HO_2C-(CH_2)_6-Me$

RN 126-30-7 HCA
CN 1,3-Propanediol, 2,2-dimethyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 334-48-5 HCA
CN Decanoic acid (8CI, 9CI) (CA INDEX NAME)

$HO_2C-(CH_2)_8-Me$

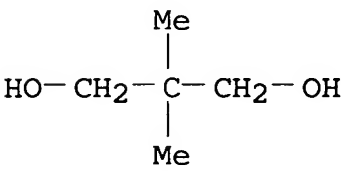
IC ICM C10L001-18
INCL 044388000
CC 51-7 (Fossil Fuels, Derivatives, and Related Products)
IT 50-70-4, Sorbitol, reactions 57-55-6, Propylene glycol, reactions

64-19-7, Acetic acid, reactions 74-85-1, Ethylene, reactions 75-98-9, 2,2-Dimethyl propionic acid 77-84-9 77-85-0, Trimethylol ethane 77-99-6, Trimethylol propane 78-24-0, Tri-pentaerythritol 79-09-4, Propionic acid, reactions 109-52-4, n-Pentanoic acid, reactions 110-15-6, Succinic acid, reactions 110-63-4, 1,4-Butanediol, reactions 111-14-8, n-Heptanoic acid 111-20-6, Sebacic acid, reactions 112-05-0, n-Nonanoic acid 115-77-5, Mono-pentaerythritol, reactions 116-53-0, 2-Methylbutyric acid 123-99-9, Azelaic acid, reactions **124-04-9**, Adipic acid, reactions **124-07-2**, n-Octanoic acid, reactions **126-30-7**, Neopentyl glycol 126-58-9, Di-pentaerythritol 149-57-5, 2-Ethyl hexanoic acid **334-48-5**, n-Decanoic acid 503-74-2, Isopentanoic acid 646-07-1, Iso-hexanoic acid 693-23-2, Dodecanedioic acid 1330-19-4, Isoheptanoic acid 2163-42-0, 2-Methyl-1,3-propanediol 3302-10-1, 3,5,5-Trimethyl hexanoic acid 7426-71-3, Trimethylol butane 25103-52-0, Cekanoic C8 acid 25339-17-7, Isodecyl alcohol 26403-17-8, Isodecanoic acid 26896-18-4, Isononanoic acid 26896-20-8, Neodecanoic acid 33113-10-9, Neoheptanoic acid 59354-78-8, Neononanoic acid 101962-32-7, Neooctanoic acid
(polyol ester distillate fuels additive)

L53 ANSWER 5 OF 16 HCA COPYRIGHT 2005 ACS on STN
130:299205 Low viscosity energy efficient polyol-ester containing refrigerant. Dick, Diane L.; Malone, Gilbert Raymond; Vinci, James N. (The Lubrizol Corporation, USA). Eur. Pat. Appl. EP 913457 A2 **19990506**, 22 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO. (English). CODEN: EPXXDW. APPLICATION: EP 1998-308866 19981029. PRIORITY: US 1997-961305 19971030.

AB A liq. refrigeration compn. is disclosed which comprises (A) .gtoreq.1 F-contg. hydrocarbon contg. 1 or 2 C atoms, further wherein F is the only halogen in the F-contg. hydrocarbon; and an effective amt. of .gtoreq. miscible org. **lubricant** comprising (B) .gtoreq.1 ester of a carboxylic acid and a polyhydroxy compd. characterized by the general formula R[OC(O)R1]n, wherein R is a hydrocarbyl group; each R1 is independently (a) H, (b) a straight chain hydrocarbyl group having from 1-7 C atoms, (c) branched chain hydrocarbyl group having from 4-20 C atoms, or (d) a straight chain hydrocarbyl group having from 8-14 C atoms, provided that when .gtoreq.1 R1 is (d), .gtoreq.1 other R1 is either (a) or (b); n is >2; and (C) a performance additive comprising (1) an alkoxylated alc. or phenol of the formula R2O[(CH2)yCHR3O]xH or (2) an alkoxylated glycol of the formula R13O[(CH2)yCHR3O]xH, wherein R2 is an aliph. group contg. 1-20 C atoms or an arom. or aliph. substituted arom. group contg. 6-24 C atoms, R3 is H, Me or Et, R13 is a hydroxy alkyl group wherein the alkyl group contains 2-8 C atoms, y is an integer of 1-3 and x is an integer of 2-50.

IT **126-30-7**
(in prepn. of polyol esters; low viscosity energy efficient polyol-ester contg. refrigerant)
RN 126-30-7 HCA
CN 1,3-Propanediol, 2,2-dimethyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



IT **124-04-9D**, Adipic acid, polyol esters **334-48-5D**, Decanoic acid, polyol esters
(low viscosity energy efficient polyol-ester contg. refrigerant)
RN 124-04-9 HCA
CN Hexanedioic acid (9CI) (CA INDEX NAME)

RN 334-48-5 HCA
CN Decanoic acid (8CI, 9CI) (CA INDEX NAME)

IC ICM C10M171-00
ICS C10M169-04; C09K005-04
ICI C10M169-04, C10M105-38, C10M105-42, C10M129-10, C10M129-16, C10M137-10, C10M145-26, C10M145-36; C10N040-30
CC 51-8 (Fossil Fuels, Derivatives, and Related Products)
ST polyol ester energy efficient refrigerant **lubricant**; hydrofluorocarbon refrigerant **lubricant antiwear** performance additive
IT **Lubricating** oils
(compressor; low viscosity energy efficient polyol-ester contg. refrigerant)
IT **Lubricating** oils
(low viscosity energy efficient polyol-ester contg. refrigerant)
IT 50-70-4, Sorbitol, reactions 56-81-5, 1,2,3-Propanetriol, reactions 57-55-6, 1,2-Propanediol, reactions 77-99-6, Trimethylolpropane 78-24-0, Tripentaerythritol 107-21-1, 1,2-Ethanediol, reactions 107-88-0, 1,3-Butanediol 110-63-4, 1,4-Butanediol, reactions 111-46-6, Diethylene glycol, reactions 112-27-6 115-77-5, reactions **126-30-7** 126-58-9, Dipentaerythritol 144-19-4, 2,2,4-Trimethyl-1,3-pentanediol

584-03-2, 1,2-Butanediol 25265-71-8, Dipropylene glycol
36675-34-0, Hexaglycerol 56090-54-1, Triglycerol
(in prepn. of polyol esters; low viscosity energy efficient polyol-ester contg. refrigerant)

IT 57-11-4D, Stearic acid, polyol esters 64-18-6D, Formic acid, polyol esters, uses 64-19-7D, Acetic acid, polyol esters, uses 79-09-4D, Propionic acid, polyol esters 88-09-5D, 2-Ethylbutyric acid, polyol esters 107-92-6D, Butyric acid, polyol esters 109-52-4D, Pentanoic acid, polyol esters, uses 110-15-6D, Succinic acid, polyol esters 110-16-7D, Maleic acid, polyol esters 111-14-8D, Heptanoic acid, polyol esters 112-85-6D, Behenic acid, polyol esters **124-04-9D**, Adipic acid, polyol esters 142-62-1D, Hexanoic acid, polyol esters, uses 143-07-7D, Dodecanoic acid, polyol esters, uses 149-57-5D, 2-Ethylhexanoic acid, polyol esters **334-48-5D**, Decanoic acid, polyol esters 3302-10-1D, 3,5,5-Trimethylhexanoic acid, polyol esters 4536-23-6D, 2-Methylhexanoic acid, polyol esters 25354-97-6D, 2-Hexyldecanoic acid, polyol esters 26896-20-8D, Neodecanoic acid, polyol esters 30399-84-9D, Isostearic acid, polyol esters 33113-10-9D, Neoheptanoic acid, polyol esters
(low viscosity energy efficient polyol-ester contg. refrigerant)

L53 ANSWER 6 OF 16 HCA COPYRIGHT 2005 ACS on STN
129:333162 Polyol and complex esters for use with, in particular, fluorinated refrigerants. Koistinen, Jari; Rissanen, Kari; Silvennoinen, Laura; Koskimies, Salme (Neste Oy, Finland). PCT Int. Appl. WO 9846706 A1 **19981022**, 19 pp. DESIGNATED STATES: W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG. (English). CODEN: PIXXD2. APPLICATION: WO 1998-FI329 19980414. PRIORITY: FI 1997-1548 19970411; FI 1997-1549 19970411; FI 1998-730 19980331.

AB The invention concerns a refrigerant compn. which comprises a chlorine-free hydrofluorocarbon based refrigerant and, mixed with the refrigerant, a **lubricant** comprising a polyol ester. According to the invention the polyol ester comprises an ester of 3-hydroxy-2,2-dimethylpropyl-3-hydroxy-2,2-dimethylpropionate, the carboxylic acid residue of which is derived from a linear or branched C4-18-carboxylic acid or an anhydride thereof, or it is derived from a mixt. of linear or branched C4-18-carboxylic acids or anhydrides thereof. The present invention also concerns novel complex ester of 3-hydroxy-2,2-dimethylpropyl-3-hydroxy-2,2-dimethylpropionate, which contain residues of mono- or bivalent carboxylic acids. The novel esters exhibit good soly. in

fluorinated hydrocarbons and excellent **lubricating** properties.

IT **124-04-9**, Hexanedioic acid, reactions **124-07-2**, Octanoic acid, reactions **126-30-7**
(in prepn. of polyol and complex esters for use with, in particular, fluorinated refrigerants)

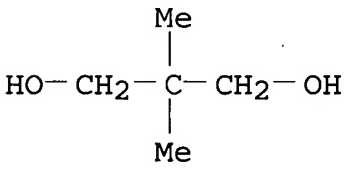
RN 124-04-9 HCA
CN Hexanedioic acid (9CI) (CA INDEX NAME)

$HO_2C-(CH_2)_4-CO_2H$

RN 124-07-2 HCA
CN Octanoic acid (8CI, 9CI) (CA INDEX NAME)

$HO_2C-(CH_2)_6-Me$

RN 126-30-7 HCA
CN 1,3-Propanediol, 2,2-dimethyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



IC ICM C10M105-42
ICS C09K005-04; C07C069-67

CC 51-8 (Fossil Fuels, Derivatives, and Related Products)

ST polyol complex ester **lubricant** fluorinated refrigerant

IT **Lubricants**
Lubricating oils
(polyol and complex esters for use with, in particular, fluorinated refrigerants)

IT 77-85-0, Trimethylolethane 77-99-6 94-96-2, 2-Ethyl-1,3-hexanediol 97-72-3, Isobutyric anhydride 105-08-8, 1,4-Cyclohexanedimethanol 108-30-5, reactions 110-15-6, Succinic acid, reactions 110-94-1, Glutaric acid 111-14-8, Heptanoic acid 111-16-0, Pimelic acid 111-20-6, Sebacic acid, reactions 115-77-5, reactions 115-84-4 123-99-9, Azelaic acid, reactions **124-04-9**, Hexanedioic acid, reactions **124-07-2**, Octanoic acid, reactions **126-30-7** 141-82-2, Propanedioic acid, reactions 143-07-7, Dodecanoic acid, reactions 144-19-4, 2,2,4-Trimethyl-1,3-pentanediol 144-62-7, Ethanedioic acid, reactions 149-57-5, 2-Ethylhexanoic acid 505-48-6, Octanedioic acid 552-30-7 595-46-0, Dimethylmalonic acid 1115-20-4

54502-37-3, 2-Ethylbutanoic anhydride
(in prepn. of polyol and complex esters for use with, in particular, fluorinated refrigerants)

L53 ANSWER 7 OF 16 HCA COPYRIGHT 2005 ACS on STN
129:318566 Polyol ester-containing **lubricants** for use with chlorine-free hydrofluorocarbon-based refrigerants. Ankner, Kjell; Rahkola, Hakan; Koistinen, Jari; Glad, Essi; Saranpaa, Virpi (Neste OY, Finland). PCT Int. Appl. WO 9846704 A1 **19981022**, 17 pp. DESIGNATED STATES: W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG. (Finnish). CODEN: PIXXD2. APPLICATION: WO 1998-FI313 19980408. PRIORITY: FI 1997-1549 19970411.

AB The polyol esters are selected from esters of 2-butyl-2-ethyl-1,3-propane diol (I) and constitute .gtoreq.50 mol.% of the polyol moiety of the **lubricant.** The carboxylic acid moiety is derived from .gtoreq.1 linear and branched C4-18-carboxylic acids or anhydrides. The esters of 2-butyl-2-ethyl-1,3-propanediol contain mono- or dibasic carboxylic acids in mono-/dibasic mol. ratio 50:50 to 90:1. The esters are sol. in fluorinated hydrocarbons and have excellent **lubricating** properties. An ester of I contg. 50 mol.% lauric acid and 50 mol.% 2-ethylhexanoic acid had kinematic viscosity at 40 and 100.degree. 19.5 and 4.1, resp., and viscosity index 108, pour point -39.degree., and good soly. in R-134a.

IT **124-04-9D**, Adipic acid, complex esters with polyols
124-07-2D, Octanoic acid, complex esters with polyols, uses
(**lubricants** contg.; for chlorine-free hydrofluorocarbon-based refrigerants)

RN 124-04-9 HCA
CN Hexanedioic acid (9CI) (CA INDEX NAME)

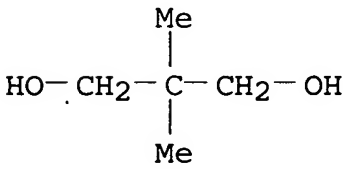
$HO_2C-(CH_2)_4-CO_2H$

RN 124-07-2 HCA
CN Octanoic acid (8CI, 9CI) (CA INDEX NAME)

$HO_2C-(CH_2)_6-Me$

IT **126-30-7D**, Neopentylglycol, complex esters
(**lubricants** for chlorine-free hydrofluorocarbon-based refrigerants contg. complex esters of 2-butyl-2-ethyl-1,3-

propanediol and)
RN 126-30-7 HCA
CN 1,3-Propanediol, 2,2-dimethyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



IC ICM C10M105-38
ICS C10M105-32
CC 51-8 (Fossil Fuels, Derivatives, and Related Products)
ST hydrofluorocarbon refrigerant **lubricant**; polyol ester **lubricant** refrigerant; butyl ethyl propane diol ester **lubricant**; monobasic dibasic carboxylic acid ester; octanoic acid ester **lubricant**; lauric acid ester **lubricant** ; ethylhexanoic acid ester **lubricant**; pentanoic acid ester **lubricant**; hexanoic acid ester **lubricant**; adipic acid ester **lubricant**; dimethylmalonic acid ester **lubricant**; isobutanoic acid ester **lubricant**; isononanoic acid ester **lubricant**
IT Anhydrides
(C4-18-, complex esters with polyols, **lubricants** contg.; for chlorine-free hydrofluorocarbon-based refrigerants)
IT Carboxylic acids, uses
(C4-18-, complex esters with polyols; **lubricants** for chlorine-free hydrofluorocarbon-based refrigerants contg. complex esters of 2-butyl-2-ethyl-1,3-propanediol and)
IT Carboxylic acids, uses
(dicarboxylic, C4-18-, complex esters with polyols; **lubricants** for chlorine-free hydrofluorocarbon-based refrigerants contg. complex esters of 2-butyl-2-ethyl-1,3-propanediol and)
IT Refrigerants
(hydrofluorocarbon-based, chlorine-free; polyol ester-contg. **lubricants** for)
IT Alcohols, uses
(polyhydric, esters, **lubricants**; for chlorine-free hydrofluorocarbon-based refrigerants)
IT **Lubricants**
(polyol ester-based; for chlorine-free hydrofluorocarbon-based refrigerants)
IT 110-15-6D, Succinic acid, complex esters with polyols 110-94-1D, Glutaric acid, complex esters with polyols 111-16-0D, Pimelic acid, complex esters with polyols 111-20-6D, Sebacic acid, complex esters with polyols 115-84-4D, 2-Butyl-2-ethyl-1,3-propanediol,

complex esters 123-99-9D, Azelaic acid, complex esters with polyols **124-04-9D**, Adipic acid, complex esters with polyols **124-07-2D**, Octanoic acid, complex esters with polyols, uses 141-82-2D, Malonic acid, complex esters with polyols 143-07-7D, Lauric acid, complex esters with polyols 144-62-7D, Oxalic acid, complex esters with polyols 149-57-5D, 2-Ethylhexanoic acid, complex esters with polyols 505-48-6D, Suberic acid, complex esters with polyols 595-46-0D, Dimethylmalonic acid, complex esters with polyols
(**lubricants** contg.; for chlorine-free hydrofluorocarbon-based refrigerants)

IT 77-85-0D, Trimethylolethane, complex esters 77-99-6D, Trimethylolpropane, complex esters 94-96-2D, 2-Ethyl-1,3-hexanediol, complex esters 115-77-5D, Pentaerythritol, complex esters **126-30-7D**, Neopentylglycol, complex esters 144-19-4D, complex esters 1115-20-4D, Hydroxypivalyl hydroxypivalate, complex esters
(**lubricants** for chlorine-free hydrofluorocarbon-based refrigerants contg. complex esters of 2-butyl-2-ethyl-1,3-propanediol and)

IT 75-37-6, R 152a 359-35-3, R 134 420-46-2, R 143a 430-66-0, R 143 624-72-6, R 152 811-97-2, R 134a
(polyol ester-contg. **lubricants** for)

L53 ANSWER 8 OF 16 HCA COPYRIGHT 2005 ACS on STN

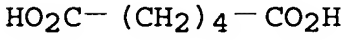
129:317925 Process for the preparation of polyhydric alcohol esters and the removal of unreacted acids by treatment of the reaction mixture with tertiary amines followed by aqueous extraction. Koistinen, Jari; Rissanen, Kari; Koskimies, Salme (Neste Oyj, Finland). PCT Int. Appl. WO 9850338 A1 **19981112**, 19 pp. DESIGNATED STATES: W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG. (English). CODEN: PIXXD2. APPLICATION: WO 1998-FI391 19980507. PRIORITY: FI 1997-1973 19970507.

AB Esters of polyhydric alcs., useful as **lubricant** base stocks (no data), **hydraulic oils** (no data), **metal-working** fluids (no data), etc. (no data), are prepd. in high yield by the esterification of C5-18 mono- and polyvalent acids (e.g., oleic acid, adipic acid, etc.) with polyhydric alcs. (e.g., 2-butyl-2-ethyl-1,3-propanediol) at 20-200.degree. in the presence of a catalyst (e.g., tin oxide) to produce aq. reaction mixts. contg. complex esters which are purified by treating the reaction mixts. with tertiary amines R1(R2)NR3

[R1-R3 = C1-5 alkyl, aryl; R1R2 = (un)substituted C5-10 ring] (e.g., triethylamine) in org. solvents, thus forming salts with the unreacted acids which are extd. with water.

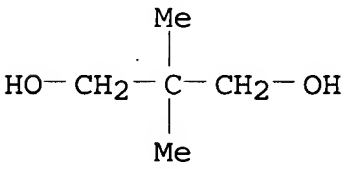
IT **124-04-9DP**, Hexanedioic acid, esters with polyhydric alcs., preparation **124-07-2DP**, Octanoic acid, esters with polyhydric alcs., preparation **126-30-7DP**, esters
(process for the prepn. of polyhydric alc. esters and the removal of unreacted acids by treatment of the reaction mixt. with tertiary amines followed by aq. extn.)

RN 124-04-9 HCA
CN Hexanedioic acid (9CI) (CA INDEX NAME)



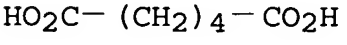
RN 124-07-2 HCA
CN Octanoic acid (8CI, 9CI) (CA INDEX NAME)

RN 126-30-7 HCA
CN 1,3-Propanediol, 2,2-dimethyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



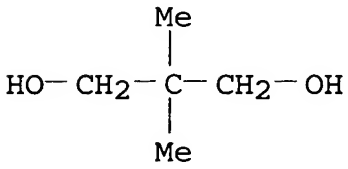
IT **124-04-9**, Hexanedioic acid, reactions **124-07-2**, Octanoic acid, reactions **126-30-7 334-48-5**, Decanoic acid
(process for the prepn. of polyhydric alc. esters and the removal of unreacted acids by treatment of the reaction mixt. with tertiary amines followed by aq. extn.)

RN 124-04-9 HCA
CN Hexanedioic acid (9CI) (CA INDEX NAME)

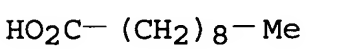


RN 124-07-2 HCA
CN Octanoic acid (8CI, 9CI) (CA INDEX NAME)

RN 126-30-7 HCA
CN 1,3-Propanediol, 2,2-dimethyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 334-48-5 HCA
CN Decanoic acid (8CI, 9CI) (CA INDEX NAME)



IC ICM C07C067-48
ICS C07C067-08; C07C067-58; C07C067-60
CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)
Section cross-reference(s): 23, 46, 51
IT 77-85-0DP, Trimethylolethane, esters 77-99-6DP, esters
110-15-6DP, Succinic acid, esters with polyhydric alcs.
110-94-1DP, Glutaric acid, esters with polyhydric alcs.
111-16-0DP, Pimelic acid, esters with polyhydric alcs. 111-20-6DP,
Sebacic acid, esters with polyhydric alcs. 112-80-1DP,
9-Octadecenoic acid (9Z)-, esters with polyhydric alcs., preparation
115-77-5DP, esters 115-84-4DP, esters 123-99-9DP, Azelaic acid,
esters with polyhydric alcs. **124-04-9DP**, Hexanedioic acid,
esters with polyhydric alcs., preparation **124-07-2DP**,
Octanoic acid, esters with polyhydric alcs., preparation
126-30-7DP, esters 141-82-2DP, Propanedioic acid, esters
with polyhydric alcs., preparation 144-62-7DP, Ethanedioic acid,
esters with polyhydric alcs., preparation 149-57-5DP,
2-Ethylhexanoic acid, esters with polyhydric alcs. 505-48-6DP,
Octanedioic acid, esters with polyhydric alcs. 552-30-7DP, esters
with polyhydric alcs. 595-46-0DP, Dimethylmalonic acid, esters
with polyhydric alcs. 1115-20-4DP, esters 1637-17-8P
4835-90-9DP, esters with polyhydric alcs. 214752-08-6P
214752-10-0P 214752-12-2P 214752-14-4P 214752-16-6P
214752-17-7P 214752-18-8P 214752-19-9P 214752-20-2P
214752-21-3P
(process for the prepn. of polyhydric alc. esters and the removal of unreacted acids by treatment of the reaction mixt. with tertiary amines followed by aq. extn.)
IT 75-50-3, Trimethylamine, reactions 91-66-7, N,N-Diethylaniline
92-59-1, N-Benzyl-N-ethylaniline 102-69-2, Tripropylamine
102-82-9, Tributylamine 111-20-6, Sebacic acid, reactions

112-05-0, Nonanoic acid 112-80-1, 9-Octadecenoic acid (9Z)-, reactions 115-77-5, reactions 115-84-4 121-44-8, reactions 121-69-7, N,N-Dimethylaniline, reactions **124-04-9**, Hexanedioic acid, reactions **124-07-2**, Octanoic acid, reactions **126-30-7** 143-07-7, Dodecanoic acid, reactions **334-48-5**, Decanoic acid 603-34-9 616-39-7, Diethylmethylamine 621-77-2, Tri-n-amylamine 645-41-0, Triisoamylamine 1115-20-4 1116-40-1, Triisobutylamine
(process for the prepn. of polyhydric alc. esters and the removal of unreacted acids by treatment of the reaction mixt. with tertiary amines followed by aq. extn.)

L53 ANSWER 9 OF 16 HCA COPYRIGHT 2005 ACS on STN
128:323932 Polyol ester compositions with unconverted hydroxyl groups as thermally and oxidatively stable **lubricants.** Schlosberg, Richard Henry; Aldrich, Haven S.; Sherwood-Williams, Lavonde Denise; Szobota, John S.; Krevalis, Martin Anthony; Leta, Daniel P.; Holt, David Gary Lawton; Gordon, Fay H. (Exxon Chemical Patents Inc., USA). U.S. US 5744434 A **19980428**, 21 pp., Cont.-in-part of U.S. Ser. No. 403,366. (English). CODEN: USXXAM. APPLICATION: US 1996-615380 19960314. PRIORITY: US 1995-403366 19950314.

AB A synthetic ester compn. which exhibits thermal and oxidative stability, lower friction coeff. and lower wear, wherein the ester compn. comprises the reaction product of: a branched or linear alc. having the general formula R(OH)n, wherein R is an aliph. or cyclo-aliph. group having from .apprx.2 to 20 carbon atoms and n is at least 2; and at least one branched mono-carboxylic acid which has a carbon no. in the range between about C5 to C13 ; wherein the synthetic ester compn. has between .apprx.5-35% unconverted hydroxyl groups, based on the total amt. of hydroxyl groups in the branched or linear alc.

IT **124-04-9**, Adipic acid, reactions **124-07-2**, Octanoic acid, reactions **126-30-7**, Neopentyl glycol **334-48-5**, Decanoic acid.
(polyol ester compns. with unconverted hydroxyl groups as thermally and oxidatively stable **lubricants**)

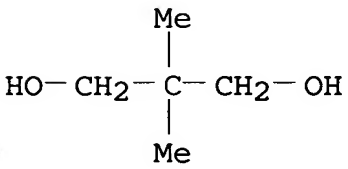
RN 124-04-9 HCA
CN Hexanedioic acid (9CI) (CA INDEX NAME)

$HO_2C-(CH_2)_4-CO_2H$

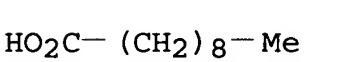
RN 124-07-2 HCA
CN Octanoic acid (8CI, 9CI) (CA INDEX NAME)

$HO_2C-(CH_2)_6-Me$

RN 126-30-7 HCA
CN 1,3-Propanediol, 2,2-dimethyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 334-48-5 HCA
CN Decanoic acid (8CI, 9CI) (CA INDEX NAME)



IC ICM C10M129-74
INCL 508485000
CC 51-8 (Fossil Fuels, Derivatives, and Related Products)
ST **lubricant** polyol ester oxidn stability
IT Polyoxyalkylenes, reactions
(polyol ester compns. with unconverted hydroxyl groups as thermally and oxidatively stable **lubricants**)
IT **Lubricants**
(synthetic polyol; polyol ester compns. with unconverted hydroxyl groups as thermally and oxidatively stable **lubricants**)
IT 50-70-4, Sorbitol, reactions 56-81-5, Glycerol, reactions 57-55-6, Propylene glycol, reactions 64-19-7, Acetic acid, reactions 75-98-9, 2,2-Dimethyl propionic acid 77-84-9 77-85-0, Trimethylol ethane 77-99-6, Trimethylol propane 78-24-0, Tri-pentaerythritol 79-09-4, Propionic acid, reactions 90-30-2 107-21-1, Ethylene glycol, reactions 109-52-4, Pentanoic acid, reactions 110-63-4, 1,4-Butanediol, reactions 111-14-8, Heptanoic acid 111-20-6, Sebacic acid, reactions 112-05-0, Nonanoic acid 115-77-5, Mono-pentaerythritol, reactions 123-99-9, Azelaic acid, reactions **124-04-9**, Adipic acid, reactions **124-07-2**, Octanoic acid, reactions **126-30-7**, Neopentyl glycol 126-58-9, Di-pentaerythritol 149-57-5, 2-Ethyl hexanoic acid **334-48-5**, Decanoic acid 646-07-1, Iso-hexanoic acid 693-23-2, Dodecanedioic acid 1330-19-4, Isoheptanoic acid 2163-42-0, 2-Methyl-1,3-propanediol 3007-75-8, Dioctyl phenylamine 3302-10-1, 3,5,5-Trimethyl hexanoic acid 7426-71-3, Trimethylol butane 25103-52-0, Isooctanoic acid 26403-17-8, Isodecanoic acid 26896-18-4, Isononanoic acid 26896-20-8, Neodecanoic acid 33113-10-9, Neoheptanoic acid 59354-78-8, Neononanoic acid 101962-32-7, Neooctanoïc acid
(polyol ester compns. with unconverted hydroxyl groups as thermally and oxidatively stable **lubricants**)

L53 ANSWER 10 OF 16 HCA COPYRIGHT 2005 ACS on STN
128:246127 Polyol ester distillate fuels additive. Vrahopoulou, Elisavet P.; Schlosberg, Richard H.; Turner, David W. (Exxon Research and Engineering Company, USA). PCT Int. Appl. WO 9811178 A1 **19980319**, 16 pp. DESIGNATED STATES: W: AU, BR, CA, CN, JP, MX; RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE. (English). CODEN: PIXXD2. APPLICATION: WO 1997-US16333 19970911. PRIORITY: US 1996-712990 19960913.

AB A polyol ester distillate fuel additive exhibits improved **lubricity** and friction and wear performance. The ester has between .apprx.1 % and .apprx.35 % unconverted hydroxyl groups and is characterized as having a hydroxyl no. from .apprx.5 to .apprx.180.

IT **124-04-9**, Adipic acid, uses **124-07-2**, Octanoic acid, uses **126-30-7**, Neopentyl glycol **334-48-5**, Decanoic acid
(polyol ester distillate fuels additive)

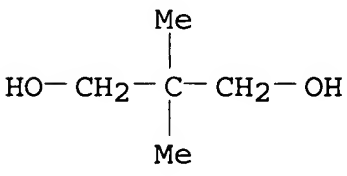
RN 124-04-9 HCA
CN Hexanedioic acid (9CI) (CA INDEX NAME)

$HO_2C-(CH_2)_4-CO_2H$

RN 124-07-2 HCA
CN Octanoic acid (8CI, 9CI) (CA INDEX NAME)

$HO_2C-(CH_2)_6-Me$

RN 126-30-7 HCA
CN 1,3-Propanediol, 2,2-dimethyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 334-48-5 HCA
CN Decanoic acid (8CI, 9CI) (CA INDEX NAME)

$HO_2C-(CH_2)_8-Me$

IC ICM C10L001-18
CC 51-7 (Fossil Fuels, Derivatives, and Related Products)

IT 50-70-4, Sorbitol, uses 57-55-6, Propylene glycol, uses 64-19-7, Acetic acid, uses 75-98-9, 2,2-Dimethylpropionic acid 77-84-9 77-85-0, Trimethylol ethane 77-99-6, Trimethylol propane 78-24-0, Tri pentaerythritol 79-09-4, Propionic acid, uses 107-21-1, Ethylene glycol, uses 109-52-4, Pentanoic acid, uses 110-15-6, Succinic acid, uses 110-63-4, 1,4-Butanediol, uses 111-14-8, Heptanoic acid 111-20-6, Sebacic acid, uses 112-05-0, Nonanoic acid 115-77-5, Pentaerythritol, uses 116-53-0, 2-Methylbutyric acid 123-99-9, Azelaic acid, uses **124-04-9**, Adipic acid, uses **124-07-2**, Octanoic acid, uses **126-30-7**, Neopentyl glycol 126-58-9, Di pentaerythritol 143-07-7, Dodecanoic acid, uses 149-57-5, 2-Ethyl hexanoic acid **334-48-5**, Decanoic acid 503-74-2, Isopentanoic acid 646-07-1, Isohexanoic acid 1330-19-4, Isoheptanoic acid 2163-42-0, 2-Methyl1,3-propanediol 3302-10-1, 3,5,5-Trimethyl hexanoic acid 7426-71-3, Trimethylol butane 25103-52-0, Isooctanoic acid 26403-17-8, Isodecanoic acid 26896-18-4, Isononanoic acid 26896-20-8, Neodecanoic acid 33113-10-9, Neoheptanoic acid 59354-78-8, Neononanoic acid 101962-32-7, Neooctanoic acid
(polyol ester distillate fuels additive)

L53 ANSWER 11 OF 16 HCA COPYRIGHT 2005 ACS on STN
126:77331 Synthetic **lubricating** oils and their working fluid compositions for refrigerators. Hirao, Keiji; Nishimura, Sachiko; Memita, Michimasa; Sei, Nobuhiko (Nippon Oils & Fats Co Ltd, Japan). Jpn. Kokai Tokkyo Koho JP 08295892 A2 **19961112** Heisei, 15 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1995-124437 19950424.

AB Title **lubricating** oils comprise esters derived from (A) C4-18 monovalent alcs. contg. .gtoreq.50 mol% branched alcs. or C.ltoreq.30 neopentyl polyols, (B) hydroxycarboxylic acids or their condensates, preferably HOCH2C(R1)(R2)CO2H (R1, R2 = H, OH, CH2OH, alkyl; R1 and R2 are not H at the same time) or HOC(R3)(R4)CO2H (R2, R4 = H, OH, alkyl; R3 and R4 are not H at the same time), (C) C4-18 monovalent carboxylic acids contg. .gtoreq.50 mol% branched carboxylic acids, and (D) C4-10 multivalent carboxylic acids or their esters. The fluid compns. comprise 1:99-99:1% mixts. of the **lubricating** oils and chlorine-free freons, e.g., HFC 134a (1,1,1,2-tetrafluoroethane), HFC 32 (difluoromethane), or HFC 125 (1,1,1,2,2-pentafluoroethane). The **lubricating** oils have good compatibility for chlorine-free freon coolants, electronic insulating property, low-temp. flowability, and hydrolysis stability and are esp. useful for vapor-compression refrigerators.

IT **124-04-9DP**, Adipic acid, mixed esters with alcs. and polyols **124-07-2DP**, Octanoic acid, mixed esters with alcs. and polyols, uses **126-30-7DP**, Neopentyl glycol, mixed esters with alcs. and carboxylic acids

(**lubricating** oil esters and their working fluids of refrigerators contg. Cl-free freons)

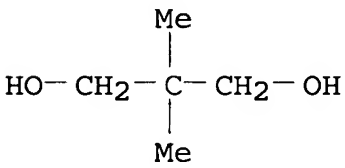
RN 124-04-9 HCA
CN Hexanedioic acid (9CI) (CA INDEX NAME)

$HO_2C-(CH_2)_4-CO_2H$

RN 124-07-2 HCA
CN Octanoic acid (8CI, 9CI) (CA INDEX NAME)

$HO_2C-(CH_2)_6-Me$

RN 126-30-7 HCA
CN 1,3-Propanediol, 2,2-dimethyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



IC ICM C10M105-12
ICS C09K005-04; C10M105-14; C10M105-24; C10M105-26; C10M105-34; C10M105-38; C10N030-00; C10N030-06; C10N040-30
CC 51-8 (Fossil Fuels, Derivatives, and Related Products)
ST **lubricating** oil ester hydroxycarboxylic acid condensate; chlorine free freon refrigerator working fluid; compatibility **lubricating** oil freon coolant
IT **Lubricating** oil additives
Lubricating oils
Refrigerants
Refrigerating apparatus
(**lubricating** oil esters and their working fluids of refrigerators contg. Cl-free freons)
IT Esters, uses
(**lubricating** oil esters and their working fluids of refrigerators contg. Cl-free freons)
IT 75-10-5, HFC 32 354-33-6, HFC 125 811-97-2, HFC 134a
(coolants; **lubricating** oil esters and their working fluids of refrigerators contg. Cl-free freons)
IT 71-36-3DP, 1-Butanol, mixed esters with polyols and carboxylic acids, uses 77-99-6DP, Trimethylolpropane, mixed esters with alcs. and carboxylic acids 78-83-1DP, 2-Methyl-1-propanol, mixed esters with polyols and carboxylic acids 79-31-2DP, 2-Methylpropionic acid, mixed esters with alcs. and polyols 88-09-5DP,

2-Ethylbutanoic acid, mixed esters with alcs. and polyols 97-95-0DP, 2-Ethyl-1-butanol, mixed esters with polyols and carboxylic acids 104-76-7DP, 2-Ethyl-1-hexanol, mixed esters with polyols and carboxylic acids 109-52-4DP, Pentanoic acid, mixed esters with alcs. and polyols, uses 110-15-6DP, Succinic acid, mixed esters with alcs. and polyols 111-14-8DP, Heptanoic acid, mixed esters with alcs. and polyols 111-20-6DP, Sebacic acid, mixed esters with alcs. and polyols 111-70-6DP, 1-Heptanol, mixed esters with polyols and carboxylic acids 111-87-5DP, 1-Octanol, mixed esters with polyols and carboxylic acids, uses 115-77-5DP, Pentaerythritol, mixed esters with alcs. and carboxylic acids 116-53-0DP, 2-Methylbutanoic acid, mixed esters with alcs. and polyols **124-04-9DP**, Adipic acid, mixed esters with alcs. and polyols **124-07-2DP**, Octanoic acid, mixed esters with alcs. and polyols, uses **126-30-7DP**, Neopentyl glycol, mixed esters with alcs. and carboxylic acids 126-58-9DP, Dipentaerythritol, mixed esters with alcs. and carboxylic acids 137-32-6DP, 2-Methyl-1-butanol, mixed esters with polyols and carboxylic acids 149-57-5DP, 2-Ethylhexanoic acid, mixed esters with alcs. and polyols 1330-19-4DP, Isoheptanoic acid, mixed esters with alcs. and polyols 3302-10-1DP, 3,5,5-Trimethylhexanoic acid, mixed esters with alcs. and polyols 3452-97-9DP, 3,5,5-Trimethyl-1-hexanol, mixed esters with polyols and carboxylic acids 25339-17-7DP, Isodecanol, mixed esters with polyols and carboxylic acids 25448-24-2DP, Isotridecanoic acid, mixed esters with alcs. and polyols 26403-17-8DP, Isodecanoic acid, mixed esters with alcs. and polyols 27458-92-0DP, Isotridecanol, mixed esters with polyols and carboxylic acids 27458-93-1DP, Isooctadecanol, mixed esters with polyols and carboxylic acids 30399-84-9DP, Isostearic acid, mixed esters with alcs. and polyols 51774-11-9DP, Isoheptanol, mixed esters with polyols and carboxylic acids

(**lubricating** oil esters and their working fluids of refrigerators contg. Cl-free freons)

L53 ANSWER 12 OF 16 HCA COPYRIGHT 2005 ACS on STN

125:304802 Polyol ester compositions with unconverted hydroxyl groups. Schlosberg, Richard Henry; Aldrich, Haven S.; Sherwood-Williams, Lavonda Denise; Szobota, John S.; Krevalis, Martin Anthony; Leta, Daniel P.; Holt, David G. L.; Gordon, Fay H. (Exxon Chemical Patents Inc., USA). PCT Int. Appl. WO 9628525 A1 **19960919**, 62 pp. DESIGNATED STATES: W: AU, BR, CA, CN, FI, JP, NO, PL, SG; RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE. (English). CODEN: PIXXD2. APPLICATION: WO 1996-US3518 19960314. PRIORITY: US 1995-403366 19950314.

AB A synthetic ester compn. which exhibits thermal and oxidative stability, lower friction coeff., and lower wear, comprises the reaction product of a branched or linear alc. having the general

formula R(OH)n, wherein R is an aliph. or cycloaliph. group having 2-20 carbon atoms and n is at least 2; and at least one branched monocarboxylic acid which has a C no. of 5-13; wherein the synthetic ester compn. has .apprx.5-35% unconverted hydroxyl groups, based on the total amt. of hydroxyl groups in the branched or linear alc. The polyol ester compn. can be used in the formulation of various **lubricants.**

IT **124-04-9**, Adipic acid, reactions **124-07-2**, Octanoic acid, reactions **126-30-7**, Neopentyl glycol **334-48-5**, Decanoic acid
(in prepn. of polyol ester compns. with unconverted hydroxyl groups for **lubricants** with enhanced thermal/oxidative stability)

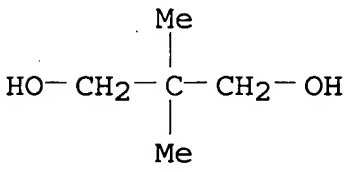
RN 124-04-9 HCA
CN Hexanedioic acid (9CI) (CA INDEX NAME)

$HO_2C-(CH_2)_4-CO_2H$

RN 124-07-2 HCA
CN Octanoic acid (8CI, 9CI) (CA INDEX NAME)

$HO_2C-(CH_2)_6-Me$

RN 126-30-7 HCA
CN 1,3-Propanediol, 2,2-dimethyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 334-48-5 HCA
CN Decanoic acid (8CI, 9CI) (CA INDEX NAME)

$HO_2C-(CH_2)_8-Me$

IT **124-04-9D**, Adipic acid, partial esters with tech. pentaerythritol and 3,5,5-trimethylhexanoic acid
(polyol ester compns. with unconverted hydroxyl groups for **lubricants** with enhanced thermal/oxidative stability)

RN 124-04-9 HCA
CN Hexanedioic acid (9CI) (CA INDEX NAME)

$HO_2C-(CH_2)_4-CO_2H$

IC ICM C10M105-40
ICS C10M169-04; C10M105-54
CC 51-8 (Fossil Fuels, Derivatives, and Related Products)
ST **lubricant** polyol ester compn unconverted hydroxyl
IT Polyoxyalkylenes, uses
Siloxanes and Silicones, uses
(basestocks contg.; polyol ester compns. with unconverted hydroxyl groups for **lubricants** with enhanced thermal/oxidative stability)
IT **Lubricating** oils
(catapult; polyol ester compns. with unconverted hydroxyl groups with enhanced thermal/oxidative stability for)
IT Drilling fluids and muds
Hydraulic fluids
Lubricating greases
(polyol ester compns. with unconverted hydroxyl groups with enhanced thermal/oxidative stability for)
IT Fatty acids, uses
(C6-12, esters; in prepn. of polyol ester compns. with unconverted hydroxyl groups for **lubricants** with enhanced thermal/oxidative stability)
IT **Lubricating** oils
(compressor, polyol ester compns. with unconverted hydroxyl groups with enhanced thermal/oxidative stability for)
IT **Lubricating oils**
(**crankcase, two-cycle**; polyol ester compns. with unconverted hydroxyl groups with enhanced thermal/oxidative stability for)
IT Esters, uses
(di-, basestocks contg.; polyol ester compns. with unconverted hydroxyl groups for **lubricants** with enhanced thermal/oxidative stability)
IT Alcohols, uses
(polyhydric, esters, basestocks contg.; polyol ester compns. with unconverted hydroxyl groups for **lubricants** with enhanced thermal/oxidative stability)
IT **Lubricating** oils
(turbine, polyol ester compns. with unconverted hydroxyl groups with enhanced thermal/oxidative stability for)
IT Alkenes, uses
(.alpha.-, polymers, basestocks contg.; polyol ester compns. with unconverted hydroxyl groups for **lubricants** with enhanced thermal/oxidative stability)
IT 90-30-2 15721-78-5, Vanlube 81
(**antioxidant**; polyol ester compns. with unconverted

hydroxyl groups for **lubricants** with enhanced thermal/oxidative stability)

IT 7664-38-2D, Phosphoric acid, esters
(basestocks contg.; polyol ester compns. with unconverted hydroxyl groups for **lubricants** with enhanced thermal/oxidative stability)

IT 50-70-4, Sorbitol, reactions 56-81-5, Glycerol, reactions 57-55-6, Propylene glycol, reactions 64-19-7, Acetic acid, reactions 75-98-9, 2,2-Dimethylpropionic acid 77-84-9 77-85-0, Trimethylolethane 77-99-6, Trimethylolpropane 78-24-0, Tripentaerythritol 79-09-4, Propionic acid, reactions 107-21-1, Ethylene glycol, reactions 110-63-4, 1,4-Butanediol, reactions 111-14-8, Heptanoic acid 111-20-6, Sebacic acid, reactions 112-05-0, Nonanoic acid 115-77-5, Pentaerythritol, reactions 115-77-5D, Pentaerythritol, tech. 123-99-9, Azelaic acid, reactions **124-04-9**, Adipic acid, reactions **124-07-2**, Octanoic acid, reactions **126-30-7**, Neopentyl glycol 126-58-9, Dipentaerythritol 149-57-5, 2-Ethylhexanoic acid **334-48-5**, Decanoic acid 646-07-1, Isohexanoic acid 693-23-2, Dodecanedioic acid 1330-19-4, Isoheptanoic acid 2163-42-0, 2-Methyl-1,3-propanediol 3302-10-1, 3,5,5-Trimethylhexanoic acid 7426-71-3, Trimethylolbutane 25103-52-0, Isooctanoic acid 26403-17-8, Isodecanoic acid 26896-18-4, Isononanoic acid 26896-20-8, Neodecanoic acid 33113-10-9, Neoheptanoic acid 59354-78-8, Neononanoic acid 101962-32-7, Neooctanoic acid
(in prepn. of polyol ester compns. with unconverted hydroxyl groups for **lubricants** with enhanced thermal/oxidative stability)

IT 25189-70-2, 1-Decene homopolymer
(oligomeric, basestocks contg.; polyol ester compns. with unconverted hydroxyl groups for **lubricants** with enhanced thermal/oxidative stability)

IT **124-04-9D**, Adipic acid, partial esters with tech. pentaerythritol and 3,5,5-trimethylhexanoic acid 84286-75-9 120147-15-1 148045-50-5 169102-93-6
(polyol ester compns. with unconverted hydroxyl groups for **lubricants** with enhanced thermal/oxidative stability)

L53 ANSWER 13 OF 16 HCA COPYRIGHT 2005 ACS on STN

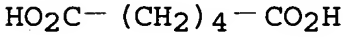
122:60013 Synthetic **lubricating** oil and working fluid composition for refrigerating machine.. Obara, Nobutoshi; Shizuka, Nobuhiko; Takahashi, Fujio (NOF Corp., Japan). Eur. Pat. Appl. EP 632124 A1 **19950104**, 39 pp. DESIGNATED STATES: R: DE, ES, FR, GB, IT, SE. (English). CODEN: EPXXDW. APPLICATION: EP 1994-110087 19940629. PRIORITY: JP 1993-188712 19930630; JP 1993-188713 19930630.

AB A synthetic **lubricating** oil comprises an ester derived

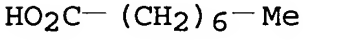
from (a) a C4-18 monohydric alc. which has a branched alc. content of .gtoreq.50 mol% and/or a C>30 neopentylpolyol, (b) a hydroxycarboxylic acid condensate having an av. d.p. of .gtoreq.1.2, and (c) a C4-18 monocarboxylic acid which has a branched carboxylic acid content of .gtoreq.50 mol%.

IT **124-04-9D**, Adipic acid, condensates, esters with C>30 neopentylpolyol and C4-18 monohydric alcs. **124-07-2D**, Octanoic acid, condensates, esters with C>30 neopentylpolyol and C4-18 monohydric alcs. **126-30-7D**, Neopentyl glycol, esters with hydroxycarboxylic acid condensate and C4-18 monohydric alcs.
(base oil; synthetic **lubricating** oil and working fluid compn. for refrigerating machine.)

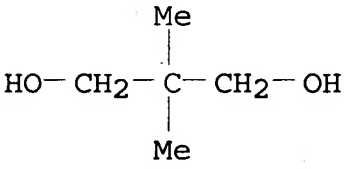
RN 124-04-9 HCA
CN Hexanedioic acid (9CI) (CA INDEX NAME)



RN 124-07-2 HCA
CN Octanoic acid (8CI, 9CI) (CA INDEX NAME)



RN 126-30-7 HCA
CN 1,3-Propanediol, 2,2-dimethyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



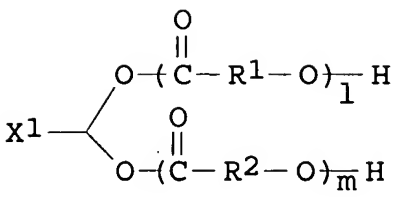
IC ICM C10M105-42
ICS C10M171-00
ICA C10N040-30
CC 51-8 (Fossil Fuels, Derivatives, and Related Products)
ST synthetic **lubricating** oil working fluid; neopentylpolyol ester refrigerator **lubricating** oil
IT **Lubricating** oils
(base oils, hydroxycarboxylic acid condensates esters with C>30 neopentylpolyol and C4-18 monohydric alcs., for refrigerators)
IT Alcohols, uses
(carboxy, condensates; condensates, esters with C>30 neopentylpolyol and C4-18 monohydric alcs., synthetic **lubricating** oil and working fluid compn. for refrigerating machine.)

IT Carboxylic acids, uses
(hydroxy, condensates; condensates, esters with C>30 neopentylpolyol and C4-18 monohydric alcs., synthetic **lubricating** oil and working fluid compn. for refrigerating machine.)

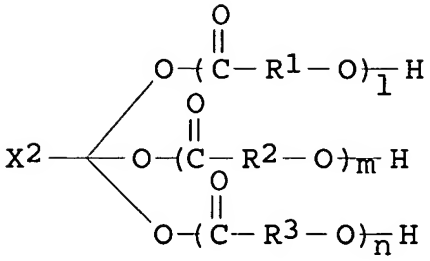
IT 71-23-8D, 1-Propanol, esters with hydroxycarboxylic acid condensate and C>30 neopentylpolyols 71-36-3D, 1-Butanol, esters with hydroxycarboxylic acid condensate and C>30 neopentylpolyols 77-99-6D, Trimethylolpropane, esters with hydroxycarboxylic acid condensate and C4-18 monohydric alcs. 78-24-0D, Tripentaerythritol, esters with hydroxycarboxylic acid condensate and C4-18 monohydric alcs. 78-83-1D, 2-Methyl-1-propanol, esters with hydroxycarboxylic acid condensate and C>30 neopentylpolyols 79-09-4D, Propanoic acid, condensates, esters with C>30 neopentylpolyol and C4-18 monohydric alcs. 79-31-2D, 2-Methylpropionic acid, condensates, esters with C>30 neopentylpolyol and C4-18 monohydric alcs. 88-09-5D, 2-Ethylbutanoic acid, condensates, esters with C>30 neopentylpolyol and C4-18 monohydric alcs. 97-95-0D, 2-Ethyl-1-butanol, esters with hydroxycarboxylic acid condensate and C>30 neopentylpolyols 104-76-7D, 2-Ethyl-1-hexanol, esters with hydroxycarboxylic acid condensate and C>30 neopentylpolyols 107-92-6D, Butanoic acid, condensates, esters with C>30 neopentylpolyol and C4-18 monohydric alcs. 110-15-6D, Succinic acid, condensates, esters with C>30 neopentylpolyol and C4-18 monohydric alcs. 111-20-6D, Sebacic acid, condensates, esters with C>30 neopentylpolyol and C4-18 monohydric alcs. 111-70-6D, 1-Heptanol, esters with hydroxycarboxylic acid condensate and C>30 neopentylpolyols 111-87-5D, 1-Octanol, esters with hydroxycarboxylic acid condensate and C>30 neopentylpolyols 115-77-5D, Pentaerythritol, esters with hydroxycarboxylic acid condensate and C4-18 monohydric alcs. 116-53-0D, 2-Methylbutanoic acid, condensates, esters with C>30 neopentylpolyol and C4-18 monohydric alcs. **124-04-9D**, Adipic acid, condensates, esters with C>30 neopentylpolyol and C4-18 monohydric alcs. **124-07-2D**, Octanoic acid, condensates, esters with C>30 neopentylpolyol and C4-18 monohydric alcs. **126-30-7D**, Neopentyl glycol, esters with hydroxycarboxylic acid condensate and C4-18 monohydric alcs. 126-58-9D, Dipentaerythritol, esters with hydroxycarboxylic acid condensate and C4-18 monohydric alcs. 137-32-6D, 2-Methyl-1-butanol, esters with hydroxycarboxylic acid condensate and C>30 neopentylpolyols 142-62-1D, Hexanoic acid, condensates, esters with C>30 neopentylpolyol and C4-18 monohydric alcs. 149-57-5D, 2-Ethylhexanoic acid, condensates, esters with C>30 neopentylpolyol and C4-18 monohydric alcs. 1330-19-4D, Isoheptanoic acid, condensates, esters with C>30 neopentylpolyol and C4-18 monohydric alcs. 3302-10-1D, 3,5,5-Trimethylhexanoic acid, condensates, esters with C>30 neopentylpolyol and C4-18 monohydric alcs.

3452-97-9D, 3,5,5-Trimethyl-1-hexanol, esters with hydroxycarboxylic acid condensate and C>30 neopentylpolyols 6250-72-2D, Isoarachidic acid, condensates, esters with C>30 neopentylpolyol and C4-18 monohydric alcs. 25339-17-7D, Isodecanol, esters with hydroxycarboxylic acid condensate and C>30 neopentylpolyols 25448-24-2D, Isotridecanoic acid, condensates, esters with C>30 neopentylpolyol and C4-18 monohydric alcs. 26403-17-8D, Isodecanoic acid, condensates, esters with C>30 neopentylpolyol and C4-18 monohydric alcs. 27458-92-0D, Isotridecanol, esters with hydroxycarboxylic acid condensate and C>30 neopentylpolyols 27458-93-1D, Isooctadecanol, esters with hydroxycarboxylic acid condensate and C>30 neopentylpolyols 30399-84-9D, Isostearic acid, condensates, esters with C>30 neopentylpolyol and C4-18 monohydric alcs. 51774-11-9D, Isoheptanol, esters with hydroxycarboxylic acid condensate and C>30 neopentylpolyols 52655-10-4D, Isoeicosanol, esters with hydroxycarboxylic acid condensate and C>30 neopentylpolyols 65437-21-0D, Isomyristic acid, condensates, esters with C>30 neopentylpolyol and C4-18 monohydric alcs. 93059-20-2D, Isotetradecanol, esters with hydroxycarboxylic acid condensate and C>30 neopentylpolyols
(base oil; synthetic **lubricating** oil and working fluid compn. for refrigerating machine.)

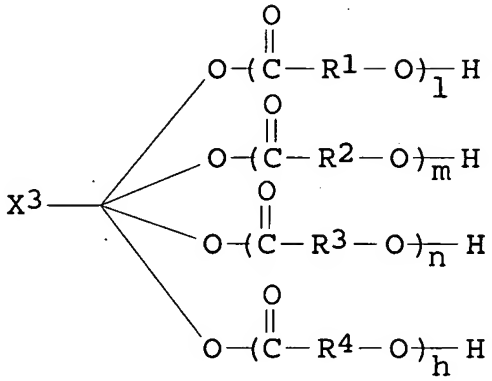
L53 ANSWER 14 OF 16 HCA COPYRIGHT 2005 ACS on STN
120:138541 stabilization of hydrogen-containing fluoroalkane compositions for refrigerating apparatus. Nakahara, Makoto; Fujii, Katsuhiro; Izumi, Masao (Sanken Kako Kk, Japan). Jpn. Kokai Tokkyo Koho JP 05279658 A2 **19931026** Heisei, 6 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1992-110746 19920402.
GI



I



II



III

AB Phenolic **antioxidants** (e.g., 2,6-di-t-butyl-4-Me phenol) are used for stabilization of the title compns. contg. (1) ester compds. contg. (a) (I), (II) and/or (III) [where R1, R2, R3 R4 = alkylene group (same or different); X1, X2, X3 = C2-10 aliph. hydrocarbon group (same or different); l, m, n, h = pos. no. (includes 0)], (b) aliph. monocarboxylic acid (e.g., capric acid), (c) polycarboxylic acid (e.g., adipic acid) and optionally (d) polyalcs. (e.g., neophenyl glycol), and (2) fluoroalkane (e.g., R 134 a).

IT **124-04-9**, Adipic acid, uses **126-30-7**, Neopentyl glycol **334-48-5**, Capric acid
(hydrogen-contg. fluoroalkane-type refrigerant compns. contg., stabilization of, phenolic **antioxidants** for)

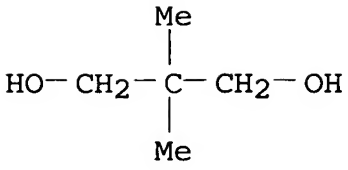
RN 124-04-9 HCA

CN Hexanedioic acid (9CI) (CA INDEX NAME)

$HO_2C-(CH_2)_4-CO_2H$

RN 126-30-7 HCA

CN 1,3-Propanediol, 2,2-dimethyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 334-48-5 HCA
CN Decanoic acid (8CI, 9CI) (CA INDEX NAME)

$HO_2C-(CH_2)_8-Me$

IC ICM C09K005-00
ICS C10M105-32; C10M109-02; C10M111-06
ICI C10M109-02, C10M105-40, C10M105-24, C10M105-26; C10M111-06, C10M105-16, C10M109-02; C10N030-10, C10N030-12, C10N040-30
CC 48-5 (Unit Operations and Processes)
ST fluoroalkane refrigerant stabilization phenolic **antioxidant**
IT **Antioxidants**
(phenolic, for stabilization of hydrogen contg. fluoroalkane-type refrigerant compns.)
IT Refrigeration
(agents, hydrogen-contg. fluoroalkane-type compns., stabilization of, phenolic **antioxidants** for)
IT 119-47-1 128-37-0, uses 3772-21-2
(**antioxidants**, for stabilization of hydrogen-contg. fluoroalkane-type refrigerant compns.)
IT 64-19-7, Acetic acid, uses 110-15-6, Succinic acid, uses 111-14-8, Enanthic acid **124-04-9**, Adipic acid, uses **126-30-7**, Neopentyl glycol **334-48-5**, Capric acid
(hydrogen-contg. fluoroalkane-type refrigerant compns. contg., stabilization of, phenolic **antioxidants** for)
IT 811-97-2, R 134a
(refrigerant compns. contg. ester compds. and aliph monocarboxylic acid and polycarboxylic acid and, stabilization of, phenolic **antioxidants** for)

L53 ANSWER 15 OF 16 HCA COPYRIGHT 2005 ACS on STN
119:274910 Synthetic ester **lubricating** oils. Nakahara, Makoto; Fujii, Katsuhiro; Izumi, Masao (Sanken Kako Kk, Japan). Jpn. Kokai Tokkyo Koho JP 05179267 A2 **19930720** Heisei, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1992-121149 19920415. PRIORITY: JP 1991-321007 19911108; JP 1991-321008 19911108.
AB Synthetic **lubricating** oils, esp. for refrigerator oils with improved compatibility with H-contg. fluoroalkane refrigerants,

comprise esters as the major component prepd. by reacting (A) hydroxycarboxylic acid polyol esters, (B) aliph. multivalent carboxylic acids, (C) aliph. monocarboxylic acids, and corresponding amts. of (D) aliph. polyhydric alcs. Suitable hydroxycarboxylic acid polyol esters are hydroxycarboxylic acid alkylene glycol esters having the general formula HOCH2C(R1)(R2)CH2OC(:O)C(R3)(R4)CH2OH, where R1-4 are the same or different alkyl groups.

IT **124-04-9DP**, Hexanedioic acid, esters with hydroxypivalic acid neopentyl glycol and heptanoic acid **124-07-2DP**, Octanoic acid, esters with hydroxy isobutyric acid neopentyl glycol and adadipic acid
(prepn. of, **lubricating** oil, for refrigerators using hydrogen-contg. fluoroalkane refrigerants)

RN 124-04-9 HCA
CN Hexanedioic acid (9CI) (CA INDEX NAME)

$HO_2C-(CH_2)_4-CO_2H$

RN 124-07-2 HCA
CN Octanoic acid (8CI, 9CI) (CA INDEX NAME)

$HO_2C-(CH_2)_6-Me$

IT **124-04-9DP**, Adipic acid, reaction products with hydroxypivalic acid, neopentyl glycol, acetic acid and caprylic acid **124-07-2DP**, Caprylic acid, reaction products with hydroxypivalic acid, neopentyl glycol, adipic acid and acetic acid **126-30-7DP**, Neopentyl glycol, reaction products with hydroxypivalic acid neopentyl glycol monoester, succinic acid, 2-ethylhexanoic acid, and caproic acid
(prepn. of, **lubricating** oils, for refrigerators using hydrogen-contg. fluoroalkane refrigerants)

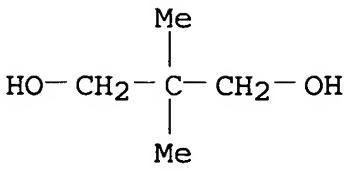
RN 124-04-9 HCA
CN Hexanedioic acid (9CI) (CA INDEX NAME)

$HO_2C-(CH_2)_4-CO_2H$

RN 124-07-2 HCA
CN Octanoic acid (8CI, 9CI) (CA INDEX NAME)

$HO_2C-(CH_2)_6-Me$

RN 126-30-7 HCA
CN 1,3-Propanediol, 2,2-dimethyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



IC ICM C10M105-38
ICS C10M105-40; C10M105-42
ICI C10N030-00, C10N030-02, C10N030-10, C10N040-30
CC 51-8 (Fossil Fuels, Derivatives, and Related Products)
ST **lubricating** oil synthetic ester; refrigerator **lubricating** oil synthetic ester
IT Refrigerating apparatus
(**lubricating** oils for, synthetic esters as, with hydrogen-contg. fluoroalkane refrigerants)
IT 77-99-6, Trimethylolpropane
(in prepn. of **lubricating** oils, for refrigerators using hydrogen-contg. fluoroalkane refrigerants)
IT 111-14-8DP, Heptanoic acid, esters with adipic acid and hydroxy pivalic acid neopentyl glycol **124-04-9DP**, Hexanedioic acid, esters with hydroxypivalic acid neopentyl glycol and heptanoic acid **124-07-2DP**, Octanoic acid, esters with hydroxy isobutyric acid neopentyl glycol and adadipic acid 594-61-6DP, neopentyl glycol ester with adipic acid and acrylic acid 1115-20-4DP, esters with adipic acid and heptanoic acid
(prepn. of, **lubricating** oil, for refrigerators using hydrogen-contg. fluoroalkane refrigerants)
IT 64-19-7DP, Acetic acid, reaction products with hydroxypivalic acid, neopentyl glycol, adipic acid and caprylic acid 110-15-6DP, Succinic acid, reaction products with hydroxypivalic acid neopentyl glycol monoester, neopentyl glycol, 2-ethylhexanoic acid, and caproic acid **124-04-9DP**, Adipic acid, reaction products with hydroxypivalic acid, neopentyl glycol, acetic acid and caprylic acid **124-07-2DP**, Caprylic acid, reaction products with hydroxypivalic acid, neopentyl glycol, adipic acid and acetic acid **126-30-7DP**, Neopentyl glycol, reaction products with hydroxypivalic acid neopentyl glycol monoester, succinic acid, 2-ethylhexanoic acid, and caproic acid 142-62-1DP, Caproic acid, reaction products with hydroxypivalic acid neopentyl glycol monoester, succinic acid, neopentyl glycol, and 2-ethylhexanoic acid 149-57-5DP, 2-Ethylhexanoic acid, reaction products with hydroxypivalic acid neopentyl glycol monoester, succinic acid, neopentyl glycol, and caproic acid 1115-20-4DP, reaction products with succinic acid, neopentyl glycol, 2-ethylhexanoic acid, and caproic acid 4835-90-9DP, Hydroxypivalic acid, reaction products with neopentyl glycol, adipic acid, acetic acid and caprylic acid

(prepn. of, **lubricating** oils, for refrigerators using hydrogen-contg. fluoroalkane refrigerants)

IT 811-97-2, R 134a
(refrigerant, with synthetic ester **lubricating** oils, for refrigerators)

L53 ANSWER 16 OF 16 HCA COPYRIGHT 2005 ACS on STN

65:46605 Original Reference No. 65:8642b-d Aminophosphonate extreme pressure additives for ester **lubricants.** (British Petroleum Co. Ltd.). BE 666662 **19660110**, 15 pp.; Addn. to Belg. 596,548 (Unavailable). PRIORITY: GB 19640710.

AB Addn. of .ltoreq.5% by wt. R1OP(O)(OR2)NR3R4 (I), where R1-R4 are H or alkyl groups, improves the extreme pressure properties of ester **lubricants** without major loss of thermal stability. Thus, a complex ester inhibited with 4 wt.-% p,p'-dioctyldiphenylamine and 0.25% benzotriazole showed 33% increase in viscosity after a Cu-catalyzed 260.degree. 6 hr.-oxidn. test, and gave a scuff load of 35 lb. in an IAE(IP166/60) gear test. Addn. of 2 wt.-% dibutyl laurylaminophosphonate gave a 39% viscosity increase in the oxidn. test and a 72 lb. gear load. Substitution of 4 wt.-% tritolylphosphate gave 38% viscosity increase and 56 lb. scuff load. Generally similar results were obtained using other oxidn. tests.

IT **124-04-9**, Adipic acid
(esters (complex), as **lubricants**, aminophosphonates as extreme-pressure additives in)

RN 124-04-9 HCA

CN Hexanedioic acid (9CI) (CA INDEX NAME)

$HO_2C-(CH_2)_4-CO_2H$

IT **124-07-2**, Octanoic acid **126-30-7**, 1,3-Propanediol, 2,2-dimethyl- **334-48-5**, Decanoic acid
(esters (complex), **lubricants**, aminophosphonates as extreme-pressure additives in)

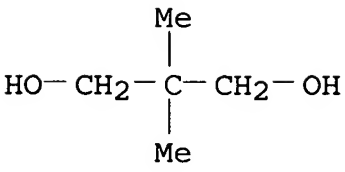
RN 124-07-2 HCA

CN Octanoic acid (8CI, 9CI) (CA INDEX NAME)

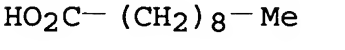
$HO_2C-(CH_2)_6-Me$

RN 126-30-7 HCA

CN 1,3-Propanediol, 2,2-dimethyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 334-48-5 HCA
CN Decanoic acid (8CI, 9CI) (CA INDEX NAME)



CC 27 (Petroleum and Petroleum Derivatives)
IT Esters
(**antioxidants** for, extreme pressure additives for, aminophosphates for)
IT **Lubricants**
(extreme-pressure additives for complex ester, aminophosphonates as)
IT Esters
(**lubricants**, aminophosphonates as extreme-pressure additives in)
IT Phosphoramidic acid, butyl-, dibutyl ester compd. with CoI2
(as **lubricant** (ester) additive)
IT Sebacic acid, ester with sucrose
(esters (complex), as **lubricants**, aminophosphonates as extreme-pressure additives in)
IT Hexanoic acid, ester (mono-)
(esters (complex), **lubricants**, aminophosphonates as extreme-pressure additives in)
IT 1,2,3-Propanetricarboxylic acid, esters (complex)
1-Propanol, 2,2-dimethyl-, esters (complex)
Nonanoic acid, esters (complex)
(**lubricants**, aminophosphonates as extreme-pressure additives in)
IT 3905-76-8, Phosphoramidic acid, dibenzyl ester 7264-96-2, Phosphonic acid, morpholino-, dibutyl ester 13021-77-7, Phosphoramidic acid, cyclohexyl-, dibutyl ester 13024-84-5, Phosphoramidic acid, phenyl-, dibutyl ester 13024-85-6, Phosphoramidic acid, benzyl-, dibutyl ester
(as **lubricant** (ester) additive)
IT 4335-49-3, Benzyl phosphoramidate 10341-05-6, Phosphoramidic acid, dodecyl-, dibutyl ester
(as **lubricant** additive)
IT 2817-45-0, Phosphoramidic acid
(diesters, N-derivs., as **lubricant** additives)

IT **124-04-9**, Adipic acid
(esters (complex), as **lubricants**, aminophosphonates as extreme-pressure additives in)
IT 111-14-8, Heptanoic acid 115-77-5, Pentaerythritol 123-44-4, 1-Pentanol, 2,2,4-trimethyl- **124-07-2**, Octanoic acid **126-30-7**, 1,3-Propanediol, 2,2-dimethyl- **334-48-5**, Decanoic acid
(esters (complex), **lubricants**, aminophosphonates as extreme-pressure additives in)
IT 123-99-9, Azelaic acid
(esters, as **lubricants**, aminophosphonates as extreme-pressure additives in)
IT 77-99-6, 1,3-Propanediol, 2-ethyl-2-(hydroxymethyl-
(**lubricants**, aminophosphonates as extreme-pressure additives in)

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L54 ANSWER 1 OF 26 HCA COPYRIGHT 2005 ACS on STN
134:335622 Magnetic recording medium with super thin film coating type magnetic layer adaptable to a magnetic resistance head. Sasaki, Hideki (Tdk Corporation, Japan). Eur. Pat. Appl. EP 1098299 A1 20010509, 19 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO. (English). CODEN: EPXXDW. APPLICATION: EP 2000-309628 20001101. PRIORITY: JP 1999-311733 19991102.
AB A magnetic recording medium for use in reprodn. with an MR head, which comprises: a nonmagnetic substrate; a nonmagnetic layer including a binder resin having dispersed therein a nonmagnetic powder on the nonmagnetic substrate; and a magnetic layer on the nonmagnetic layer, in which the magnetic layer is obtained by applying a magnetic coating material on the applied, dried and cured nonmagnetic layer, the magnetic layer includes a metal magnetic powder with a mean major axis length of from 0.03-0.08 .mu.m, and a satn. magnetization .sigma.s of from 100-130 Am2/kg, and the center line mean roughness Ra of the magnetic layer surface is 5 nm or less.
IT **110-63-4**, 1,4-Butane diol, processes **111-29-5**, 1,5-Pentane diol **124-04-9**, Adipic acid, processes **126-30-7**, Neopentyl glycol
(contg., electron beam-curable polyurethanes; magnetic recording medium with super thin film coating type magnetic layer adaptable to a magnetic resistance head)
RN 110-63-4 HCA
CN 1,4-Butanediol (8CI, 9CI) (CA INDEX NAME)

HO—$(CH_2)_4$—OH

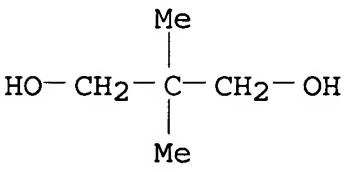
RN 111-29-5 HCA
CN 1,5-Pentanediol (8CI, 9CI) (CA INDEX NAME)

HO—$(CH_2)_5$—OH

RN 124-04-9 HCA
CN Hexanedioic acid (9CI) (CA INDEX NAME)

HO_2C—$(CH_2)_4$—CO_2H

RN 126-30-7 HCA
CN 1,3-Propanediol, 2,2-dimethyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



IT **57-11-4**, Stearic acid, processes **544-63-8**, Myristic acid, processes
(formulation for magnetic recording medium; magnetic recording medium with super thin film coating type magnetic layer adaptable to a magnetic resistance head)
RN 57-11-4 HCA
CN Octadecanoic acid (9CI) (CA INDEX NAME)

HO_2C—$(CH_2)_{16}$—Me

RN 544-63-8 HCA
CN Tetradecanoic acid (9CI) (CA INDEX NAME)

HO_2C—$(CH_2)_{12}$—Me

IC ICM G11B005-706
ICS G11B005-70
CC 77-8 (Magnetic Phenomena)
Section cross-reference(s): 49, 76, 78
IT Fatty acids, processes

(esters, **lubricants**; magnetic recording medium with super thin film coating type magnetic layer adaptable to a magnetic resistance head)

IT Amides, processes
(fatty, **lubricants**; magnetic recording medium with super thin film coating type magnetic layer adaptable to a magnetic resistance head)

IT Fatty acids, processes
Paraffin oils
(**lubricants**; magnetic recording medium with super thin film coating type magnetic layer adaptable to a magnetic resistance head)

IT **Lubricants**
Magnetic powders
(magnetic recording medium with super thin film coating type magnetic layer adaptable to a magnetic resistance head)

IT 56-81-5, Glycerine, processes 57-55-6, Propylene glycol, processes 75-21-8, Ethylene oxide, processes 77-85-0, Trimethylol ethane 77-99-6, Trimethylol propane 79-10-7, Acrylic acid, processes 79-39-0, Methacrylic acid amide 79-41-4, Methacrylic acid, processes 88-98-2, Tetrahydrophthalic acid 88-99-3, 1,2-Benzenedicarboxylic acid, processes 89-05-4, Pyromellitic acid 91-08-7, 2,6-Tolylene diisocyanate 91-93-0, 3,3'-Dimethoxy-4,4'-biphenylene diisocyanate 91-97-4 97-65-4, Itaconic acid, processes 99-96-7, processes 100-21-0, Terephthalic acid, processes 104-49-4, p-Phenylene diisocyanate 105-08-8, 1,4-Cyclohexane dimethanol 107-21-1, Ethylene glycol, processes 110-15-6, Succinic acid, processes 110-16-7, Maleic acid, processes 110-17-8, Fumaric acid, processes **110-63-4**, 1,4-Butane diol, processes **111-29-5**, 1,5-Pentane diol 111-46-6, Diethylene glycol, processes 115-07-1, Propylene, processes 115-77-5, Pentaerythritol, processes 121-91-5, Isophthalic acid, processes 123-61-5, m-Phenylene diisocyanate 123-99-9, Azelaic acid, processes **124-04-9**, Adipic acid, processes **126-30-7**, Neopentyl glycol 126-58-9, Dipentaerythritol 144-19-4, 2,2,4-Trimethyl-1,3-pentane diol 504-63-2, 1,3-Propane diol 554-95-0, Trimesic acid 584-84-9, 2,4-Tolylene diisocyanate 629-11-8, Hexamethylene glycol 821-38-5, Tetradecanedioic acid 822-06-0, Hexamethylene diisocyanate 1014-98-8, p-Xylylene diisocyanate 1687-30-5, Hexahydrophthalic acid 1711-24-6, p-(Hydroxyethoxy)benzoic acid 2761-22-0 3173-72-6, 1,5-Naphthalene diisocyanate 3634-83-1, m-Xylylene diisocyanate 4098-71-9, Isophorone diisocyanate 4538-37-8, Tetramethylene diisocyanate 9002-88-4, Polyethylene 25136-53-2, Glycerin monoallyl ether 25265-71-8, Dipropylene glycol 25567-57-1, 1,3-Diisocyanatomethylcyclohexane
(contg., electron beam-curable polyurethanes; magnetic recording medium with super thin film coating type magnetic layer adaptable

to a magnetic resistance head)

IT **57-11-4**, Stearic acid, processes **544-63-8**, Myristic acid, processes
(formulation for magnetic recording medium; magnetic recording medium with super thin film coating type magnetic layer adaptable to a magnetic resistance head)

L54 ANSWER 2 OF 26 HCA COPYRIGHT 2005 ACS on STN
134:260351 Preparation of a polyester polyurethane resin binder with high dispersion stability for magnetic recording medium. Ono, Toshitsugu (Sony Corporation, Japan). Eur. Pat. Appl. EP 1089263 A1 20010404, 12 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO. (English). CODEN: EPXXDW. APPLICATION: EP 2000-121432 20000929. PRIORITY: JP 1999-280250 19990930.

AB A magnetic recording medium includes a nonmagnetic substrate and a magnetic layer formed on the nonmagnetic substrate. The magnetic layer includes a magnetic powder and a binder. The binder includes a polyester polyurethane resin contg. a propanediol deriv., such as 2-butyl-2-ethyl-1,3-propanediol. The magnetic recording medium exhibits superior magnetostatic characteristics and electromagnetic transducing characteristics, regardless of the addn. of a crosslinking agent.

IT **124-04-9**, Adipic acid, reactions
(in prep. of polyester; prepn. of polyester polyurethane resin binder with high dispersion stability for magnetic recording medium)

RN 124-04-9 HCA
CN Hexanedioic acid (9CI) (CA INDEX NAME)

$HO_2C-(CH_2)_4-CO_2H$

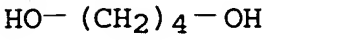
IT **57-11-4**, Stearic acid, uses
(magnetic paint formulation; prepn. of polyester polyurethane resin binder with high dispersion stability for magnetic recording medium)

RN 57-11-4 HCA
CN Octadecanoic acid (9CI) (CA INDEX NAME)

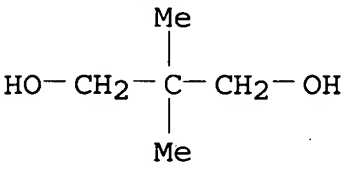
$HO_2C-(CH_2)_{16}-Me$

IT **110-63-4**, 1,4-Butanediol, reactions **126-30-7**, Neopentyl glycol
(polyester diol component; prepn. of polyester polyurethane resin binder with high dispersion stability for magnetic recording medium)

RN 110-63-4 HCA
CN 1,4-Butanediol (8CI, 9CI) (CA INDEX NAME)



RN 126-30-7 HCA
CN 1,3-Propanediol, 2,2-dimethyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



IC ICM G11B005-702
CC 77-8 (Magnetic Phenomena)
Section cross-reference(s): 37
IT Carbon black, uses
(antistatic and **lubricating** reagents; prepn. of polyester polyurethane resin binder with high dispersion stability for magnetic recording medium)
IT 7782-42-5, Graphite, uses 12138-09-9, Tungsten disulfide 13463-67-7, Titanium oxide, uses
(antistatic and **lubricating** reagents; prepn. of polyester polyurethane resin binder with high dispersion stability for magnetic recording medium)
IT 88-99-3, Phthalic acid, reactions 111-20-6, Sebacic acid, reactions **124-04-9**, Adipic acid, reactions 24980-41-4, Polycaprolactone
(in prep. of polyester; prepn. of polyester polyurethane resin binder with high dispersion stability for magnetic recording medium)
IT **57-11-4**, Stearic acid, uses 78-93-3, Methylethylketone, uses 108-88-3, Toluene, uses 110-82-7, Cyclohexane, uses 123-95-5, Butyl stearate 39278-79-0, Coronate L
(magnetic paint formulation; prepn. of polyester polyurethane resin binder with high dispersion stability for magnetic recording medium)
IT **110-63-4**, 1,4-Butanediol, reactions 115-84-4, 2-Butyl-2-ethyl-1,3-propanediol **126-30-7**, Neopentyl glycol
(polyester diol component; prepn. of polyester polyurethane resin binder with high dispersion stability for magnetic recording medium)

L54 ANSWER 3 OF 26 HCA COPYRIGHT 2005 ACS on STN
133:63653 Hydrophobically modified polysaccharide in anhydrous

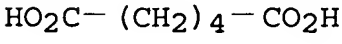
antiperspirant products. Modi, Jashawant J. (Hercules Incorporated, USA). PCT Int. Appl. WO 2000035412 A1 20000622, 36 pp. DESIGNATED STATES: W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG. (English). CODEN: PIXXD2. APPLICATION: WO 1999-US28459 19991202. PRIORITY: US 1998-224106 19981217.

AB A solid stick, underarm product compn. is composed of a liq. vehicle, an antiperspirant salt, a dibenzylidene alditol gelling agent, and a co-gelling agent of a hydrophobically modified water sol. polysaccharide polymer which comprises a water sol. polysaccharide polymer backbone, a hydrophobic moiety of C8-C24 alkyl, aryl alkyl, groups and mixts. The hydrophobic moiety renders the polysaccharide <1% sol. in water, and dibenzylidene alditol, antiperspirant and a liq. vehicle. This underarm product can be either clear or hazy. Thus, a formulation contained propylene glycol 56.45, Polysurf-67 1.10, Millithix-925 1.65, tetrasodium EDTA 0.22, Westchlor A2Z8106 40.30, and Abil B8851 0.28%.

IT **110-63-4**, Butylene glycol, biological studies
124-04-9D, Adipic acid, esters **1984-06-1**, Sodium octanoate
(hydrophobically modified polysaccharide in anhyd. antiperspirant products)

RN 110-63-4 HCA
CN 1,4-Butanediol (8CI, 9CI) (CA INDEX NAME)

RN 124-04-9 HCA
CN Hexanedioic acid (9CI) (CA INDEX NAME)



RN 1984-06-1 HCA
CN Octanoic acid, sodium salt (8CI, 9CI) (CA INDEX NAME)

IC ICM A61K007-32
CC 62-5 (Essential Oils and Cosmetics)
IT Antibacterial agents
Antioxidants
Dyes
Humectants
Odor and Odorous substances
Perfumes
Stabilizing agents
Sunscreens
UV stabilizers
(hydrophobically modified polysaccharide in anhyd. antiperspirant products)
IT 50-70-4, Sorbitol, biological studies 57-13-6, Urea, biological studies 57-55-6, 1,2-Propylene glycol, biological studies 57-55-6D, Propylene glycol, esters with fatty acids 60-00-4D, EDTA, salts 64-02-8, Tetrasodium EDTA 64-17-5, Ethanol, biological studies 65-85-0D, Benzoic acid, C12-15 alkyl esters, biological studies 67-63-0, 2-Propanol, biological studies 88-99-3D, Phthalic acid, esters 102-71-6, Triethanolamine, biological studies 107-21-1, Ethylene glycol, biological studies 107-41-5, 2,4-Dihydroxy-2-methylpentane **110-63-4**, Butylene glycol, biological studies 111-20-6D, Sebacic acid, esters 111-42-2, Diethanolamine, biological studies 111-46-6, Diethylene glycol, biological studies 112-27-6, Triethylene glycol **124-04-9D**, Adipic acid, esters 150-90-3, Disodium succinate 504-63-2, 1,3-Propylene glycol 532-32-1, Sodium benzoate 557-34-6, Zinc acetate 1310-58-3, Potassium hydroxide (K(OH)), biological studies 1310-73-2, Sodium hydroxide (Na(OH)), biological studies 1314-13-2, Zinc oxide (ZnO), biological studies **1984-06-1**, Sodium octanoate 2163-42-0, 2-Methyl-1,3-propanediol 3486-35-9, Zinc carbonate 7429-90-5D, Aluminum, salts, biological studies 7440-66-6D, Zinc, salts, biological studies 7440-67-7D, Zirconium, salts, biological studies 9000-30-0, Guar gum 9000-30-0D, Guar gum, derivs. 9004-34-6D, Cellulose, ethers, biological studies 9004-58-4, Ethyl Hydroxyethyl cellulose 9004-62-0, Hydroxyethyl cellulose 9004-64-2, Hydroxypropyl cellulose 9004-65-3, HPMC 9004-67-5, Methyl cellulose 9005-25-8, Starch, biological studies 9005-25-8D, Starch, derivs., biological studies 9005-27-0, Hydroxyethyl Starch 9032-42-2, MEthyl Hydroxyethyl cellulose 9049-76-7, Hydroxypropyl Starch 24800-44-0, TriPropylene glycol 25265-71-8, DiPropylene glycol 25322-68-3D, Polyethylene glycol, alkyl ethers 25322-69-4D, Polypropylene glycol, alkyl ethers 32647-67-9, Millithix 925 39421-75-5, Hydroxypropyl guar 56361-93-4, Dibenzylidene xylitol 146598-94-9 156229-09-3, Natrosol Plus 430

(hydrophobically modified polysaccharide in anhyd. antiperspirant products)

L54 ANSWER 4 OF 26 HCA COPYRIGHT 2005 ACS on STN
130:67424 Development of migration study methods in compliance with directives of the European Union for studies of migration (and/or content) of low-molecular-weight substances from Polish plastics intended for contact with foods. Czerniawski, Bohdan; Guberska, Jadwiga (Centralny Osrodek Badawczo-Rozwojowy Opakowan, Warsaw, 02-942, Pol.). Polimery (Warsaw), 43(11/12), 750-754 (Polish) **1998.** CODEN: POLIA4. ISSN: 0032-2725. Publisher: Instytut Chemii Przemyslowej.

AB A list is presented of various low-mol.-wt. substances occurring in polymeric materials which may come into contact with food. The migration limits and permissible amts. of these materials in polymers are given. A list of authorized monomers and other chems. which are allowed for use in the manuf. of polymers to be in contact with food is also presented along with stds. applied for their use.

IT **57-10-3**, Palmitic acid, uses **57-11-4**, Octadecanoic acid, uses **112-80-1**, Oleic acid, uses
(development of migration study methods in compliance with directives of the European Union for studies of migration and/or content of low-mol.-wt. substances from Polish plastics intended for contact with foods)

RN 57-10-3 HCA
CN Hexadecanoic acid (9CI) (CA INDEX NAME)

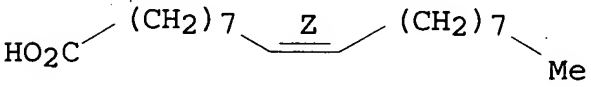
$HO_2C-(CH_2)_{14}-Me$

RN 57-11-4 HCA
CN Octadecanoic acid (9CI) (CA INDEX NAME)

$HO_2C-(CH_2)_{16}-Me$

RN 112-80-1 HCA
CN 9-Octadecenoic acid (9Z)- (9CI) (CA INDEX NAME)

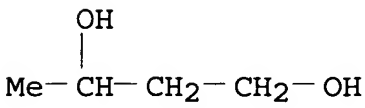
Double bond geometry as shown.



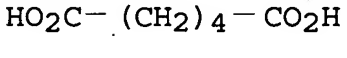
IT **107-88-0**, 1,3-Butanediol **124-04-9**, Hexanedioic acid, analysis **124-07-2**, Octanoic acid, analysis

143-07-7, Dodecanoic acid, analysis **334-48-5**, Caprynic acid **544-63-8**, Tetradecanoic acid, analysis (development of migration study methods in compliance with directives of the European Union for studies of migration and/or content of low-mol.-wt. substances from Polish plastics intended for contact with foods)

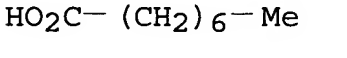
RN 107-88-0 HCA
CN 1,3-Butanediol (8CI, 9CI) (CA INDEX NAME)



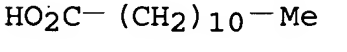
RN 124-04-9 HCA
CN Hexanedioic acid (9CI) (CA INDEX NAME)



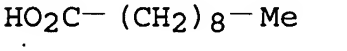
RN 124-07-2 HCA
CN Octanoic acid (8CI, 9CI) (CA INDEX NAME)



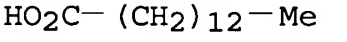
RN 143-07-7 HCA
CN Dodecanoic acid (9CI) (CA INDEX NAME)



RN 334-48-5 HCA
CN Decanoic acid (8CI, 9CI) (CA INDEX NAME)



RN 544-63-8 HCA
CN Tetradecanoic acid (9CI) (CA INDEX NAME)



CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 17, 59, 80
IT **Antioxidants**
Diffusion

Food
Stabilizing agents
Standards, legal and permissive
(development of migration study methods in compliance with directives of the European Union for studies of migration and/or content of low-mol.-wt. substances from Polish plastics intended for contact with foods)

IT 50-70-4, Sorbitol, uses 50-99-7, D-Glucose, uses **57-10-3**, Palmitic acid, uses **57-11-4**, Octadecanoic acid, uses 57-50-1, Sucrose, uses 64-17-5, Ethanol, uses 64-19-7, Acetic acid, uses 67-56-1, Methanol, uses 71-23-8, 1-Propanol, uses 71-41-0, 1-Pentanol, uses 75-07-0, Acetaldehyde, uses 77-92-9, Citric acid, uses 80-56-8, .alpha.-Pinene 97-53-0, Eugenol 108-24-7 111-87-5, 1-Octanol, uses 112-30-1, 1-Decanol **112-80-1**, Oleic acid, uses 127-91-3, .beta.-Pinene 514-10-3, Abietic acid 9004-34-6, Cellulose, uses 9004-70-0, Nitrocellulose 9005-25-8, Starch, uses 36653-82-4, 1-Hexadecanol
(development of migration study methods in compliance with directives of the European Union for studies of migration and/or content of low-mol.-wt. substances from Polish plastics intended for contact with foods)

IT 50-00-0, Formaldehyde, analysis 50-21-5, analysis 56-81-5, 1,2,3-Propanetriol, analysis 57-13-6, Urea, analysis 65-85-0, Benzoic acid, analysis 67-63-0, 2-Propanol, analysis 69-72-7, Salicylic acid, analysis 71-36-3, 1-Butanol, analysis 74-85-1, Ethene, analysis 74-86-2, Acetylene, analysis 75-01-4, Vinyl chloride, analysis 75-44-5, Carbonic dichloride 79-06-1, 2-Propenamide, analysis 79-09-4, Propanoic acid, analysis 79-10-7, 2-Propenoic acid, analysis 79-41-4, analysis 80-62-6 85-44-9, 1,3-Isobenzofurandione 88-99-3, 1,2-Benzenedicarboxylic acid, analysis 89-32-7 91-97-4 92-88-6, [1,1'-Biphenyl]-4,4'-diol 95-48-7, analysis 96-33-3 97-63-2, Ethyl methacrylate 97-65-4, analysis 97-86-9, Isobutyl methacrylate 97-88-1 99-96-7, analysis 100-20-9, 1,4-Benzenedicarbonyl dichloride 100-21-0, 1,4-Benzenedicarboxylic acid, analysis 100-42-5, analysis 100-51-6, Benzyl alcohol, analysis 102-60-3, N,N,N'N'-Tetrakis(2-hydroxypropyl)ethylenediamine 105-08-8, 1,4-Bis(hydroxymethylcyclohexane 106-31-0, Butyric anhydride 106-44-5, analysis 106-46-7 106-63-8, Isobutyl acrylate 106-89-8, Epichlorohydrin, analysis 106-98-9, 1-Butene, analysis 107-01-7, 2-Butene 107-13-1, 2-Propenenitrile, analysis 107-21-1, 1,2-Ethanediol, analysis **107-88-0**, 1,3-Butanediol 107-92-6, Butyric acid, analysis 108-30-5, Succinic anhydride, analysis 108-31-6, 2,5-Furandione, analysis 108-39-4, analysis 108-45-2, 1,3-Benzenediamine, analysis 108-55-4, Glutaric anhydride 108-95-2, Phenol, analysis 110-15-6, Butanedioic acid, analysis 110-60-1, 1,4-Diaminobutane 110-94-1, Glutaric acid 110-98-5 111-20-6, Decanedioic acid,

analysis 111-40-0 111-46-6, Bis(2-hydroxyethyl) ether, analysis 112-27-6 112-60-7, Tetraethylene glycol 112-96-9, Octadecyl isocyanate 115-07-1, 1-Propene, analysis 115-11-7, Isobutene, analysis 115-27-5, Hexachloroendomethylenetetrahydrophthalic anhydride 115-28-6, Hexachloroendomethylenetetrahydrophthalic acid 116-15-4, Hexafluoropropylene 123-38-6, Propanal, analysis 123-62-6, Propionic anhydride 123-72-8, Butyric aldehyde 123-99-9, Azelaic acid, analysis **124-04-9**, Hexanedioic acid, analysis **124-07-2**, Octanoic acid, analysis 124-38-9, Carbon dioxide, analysis 140-88-5 141-32-2 **143-07-7**, Dodecanoic acid, analysis 151-56-4, Aziridine, analysis **334-48-5**, Caprynic acid 345-92-6, 4,4'-Difluorobenzophenone **544-63-8**, Tetradecanoic acid, analysis 585-07-9 689-12-3, Isopropyl acrylate 760-93-0, Methacrylic anhydride 818-61-1 822-06-0 840-65-3, 2,6-Naphthalenedicarboxylic acid dimethyl ester 868-77-9 924-42-5 925-60-0, Propyl acrylate 1313-82-2, Sodium sulfide, analysis 1477-55-0, 1,3-Benzenedimethanamine 1647-16-1, 1,9-Decadiene 1663-39-4, tert-Butyl acrylate 1675-54-3 2035-75-8, Adipic anhydride 2123-24-2, Caprolactam sodium salt 2146-71-6 2177-70-0, Phenyl methacrylate 2210-28-8, Propyl methacrylate 2432-99-7, 11-Aminoundecanoic acid 2495-35-4, Benzyl acrylate 2495-37-6 2499-59-4, n-Octyl acrylate 2561-88-8, Sebacic anhydride 2855-13-2, 1-Amino-3-aminomethyl-3,5,5-trimethylcyclohexane 2998-08-5, sec-Butyl acrylate 2998-18-7, sec-Butyl methacrylate 3173-53-3, Cyclohexyl isocyanate 3173-72-6, 1,5-Diisocyanatonaphthalene 3965-55-7, Sodium dimethyl 5-sulfoisophthalate 4128-73-8, 4,4'-Diisocyanatodiphenyl ether 4196-95-6, Azelaic anhydride 4655-34-9, Isopropyl methacrylate 5124-30-1, Bis(4-isocyanatocyclohexyl)methane 5873-54-1, 2,4'-Diisocyanatodiphenylmethane 6362-79-4, 5-Sulfoisophthalic acid monosodium salt 7664-38-2, Phosphoric acid, analysis 7664-41-7, Ammonia, analysis 7782-50-5, Chlorine, analysis 11132-73-3, Lignocellulose 15214-89-8 24800-44-0, Tripropylene glycol 25265-71-8, Dipropylene glycol 25322-68-3 25322-69-4, Polypropylene glycol 26747-90-0, 2,4-Tolylene diisocyanate dimer 38103-06-9 47465-97-4

(development of migration study methods in compliance with directives of the European Union for studies of migration and/or content of low-mol.-wt. substances from Polish plastics intended for contact with foods)

L54 ANSWER 5 OF 26 HCA COPYRIGHT 2005 ACS on STN

128:75534 Preparation of organic silicon and phosphorus containing compounds utilized as coating agents, adhesives, surfactants, insecticides, **hydraulic fluid** and other uses.

Blount, David H. (USA). U.S. US 5703258 A **19971230**, 12 pp., Cont.-in-part of U.S. Ser. No. 680,651. (English). CODEN:

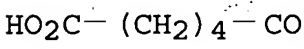
USXXAM. APPLICATION: US 1996-752787 19961120. PRIORITY: US 1993-160176 19931202; US 1996-680651 19960716.

AB A flame retardant org. silicon and phosphorus contg. compd. is produced by reacting a silicon halides compd. with an org. phosphorus compd. to produce an org. silicon and phosphorus halides compd. which is then reacted with an org. compd. to produce an org. silicon and phosphorus contg. compd. This org. silicon and phosphorus contg. compd. is incorporated in an otherwise more flammable org. material under reaction conditions and in an amt. sufficient to reduce the combustibility of the otherwise more flammable org. material. The org. silicon and phosphorus contg. compd. may also be utilized as coating agents, adhesives, surfactants, insecticides, **hydraulic fluid** and other uses.

IT **110-63-4**, 1,4-Butanediol, reactions **124-04-9**, Hexanedioic acid, reactions **764-71-6 1912-83-0**
(prepn. of org. silicon and phosphorus contg. compds. utilized as coating agents, adhesives, surfactants, insecticides, **hydraulic fluid** and other uses)

RN 110-63-4 HCA
CN 1,4-Butanediol (8CI, 9CI) (CA INDEX NAME)

RN 124-04-9 HCA
CN Hexanedioic acid (9CI) (CA INDEX NAME)



RN 764-71-6 HCA
CN Octanoic acid, potassium salt (8CI, 9CI) (CA INDEX NAME)

RN 1912-83-0 HCA
CN Octanoic acid, tin(2+) salt (8CI, 9CI) (CA INDEX NAME)

$HO_2C-(CH_2)_6-Me$

●1/2 Sn(II)

IC ICM C07F007-08
ICS C07F007-10
INCL 556404000
CC 29-7 (Organometallic and Organometalloidal Compounds)
ST organo silicon phosphorus contg compd prepn; coating agent organo silicon phosphorus prepn; adhesive organo silicon phosphorus prepn; surfactant organo silicon phosphorus prepn; insecticide organo silicon phosphorus prepn; **hydraulic fluid** organo silicon phosphorus prepn; flame retardant organo silicon phosphorus prepn
IT Castor oil
(prepn. of org. silicon and phosphorus contg. compds. utilized as coating agents, adhesives, surfactants, insecticides, **hydraulic fluid** and other uses)
IT 50-00-0, Formaldehyde, reactions 56-81-5, 1,2,3-Propanetriol, reactions 57-13-6, Urea, reactions 57-55-6, 1,2-Propanediol, reactions 62-53-3, Benzenamine, reactions 62-56-6, Thiourea, reactions 64-17-5, Ethanol, reactions 64-19-7, Acetic acid, reactions 67-63-0, Isopropyl alcohol, reactions 71-36-3, 1-Butanol, reactions 74-86-2, Ethyne, reactions 75-04-7, Ethylamine, reactions 75-05-8, Acetonitrile, reactions 75-20-7, Calcium carbide 75-21-8, Oxirane, reactions 75-56-9, reactions 75-74-1, Tetramethyllead 75-79-6, Trichloro(methyl)silane 78-40-0, Triethyl phosphate 78-42-2, Tris(2-ethylhexyl) phosphate 79-10-7, 2-Propenoic acid, reactions 79-17-4, Aminoguanidine 79-41-4, reactions 88-12-0, reactions 88-99-3, 1,2-Benzenedicarboxylic acid, reactions 96-24-2, Chlorohydrin 97-93-8, Triethylaluminum, reactions 98-01-1, Furfural, reactions 98-13-5, Phenyltrichlorosilane 100-21-0, 1,4-Benzenedicarboxylic acid, reactions 100-51-6, Benzyl alcohol, reactions 100-52-7, Benzaldehyde, reactions 100-59-4, Phenylmagnesium chloride 100-99-2, reactions 101-90-6 102-85-2, Tributyl phosphite 105-60-2, reactions 106-88-7 106-89-8, reactions 106-92-3 107-02-8, Acrolein, reactions 107-07-3, 2-Chloroethanol, reactions 107-13-1, 2-Propenenitrile, reactions 107-15-3, 1,2-Ethanediamine, reactions 107-18-6, 2-Propen-1-ol, reactions 107-19-7, Propargyl alcohol 107-21-1, 1,2-Ethanediol, reactions 107-66-4, Dibutyl phosphate 108-30-5, reactions 108-31-6, 2,5-Furandione, reactions 108-78-1, 1,3,5-Triazine-2,4,6-triamine, reactions 108-95-2, Phenol, reactions 109-53-5 109-72-8, Butyllithium,

reactions 110-15-6, Butanedioic acid, reactions 110-16-7, 2-Butenedioic acid (Z)-, reactions 110-17-8, 2-Butenedioic acid (E)-, reactions **110-63-4**, 1,4-Butanediol, reactions 111-40-0, Diethylenetriamine 111-46-6, Diethylene glycol, reactions 112-27-6 113-00-8, Guanidine 115-21-9, Ethyltrichlorosilane 116-17-6, Triisopropyl phosphite 121-45-9, Trimethyl phosphite 121-57-3 122-52-1, Triethyl phosphite 122-60-1, 1,2-Epoxy-3-phenoxypropane **124-04-9**, Hexanedioic acid, reactions 124-09-4, 1,6-Hexanediamine, reactions 126-73-8, Tributyl phosphate, reactions 127-09-3, Sodium acetate 139-02-6, Sodium phenoxide 140-08-9, Tris(2-chloroethyl) phosphite 280-57-9, Triethylenediamine 298-07-7 301-13-3, Tris(2-ethylhexyl) phosphite 461-58-5, Dicyandiamide 503-09-3, Epifluorohydrin 512-56-1, Trimethyl phosphate 513-02-0, Triisopropyl phosphate 557-20-0, Diethylzinc 592-01-8, Calcium cyanide 598-50-5, Methylurea 627-44-1, Diethylmercury 676-54-0, Ethylsodium 762-04-9, Diethyl phosphite **764-71-6** 811-49-4, Ethyllithium 818-08-6, Dibutyltin oxide 838-85-7, Diphenyl phosphate 868-85-9, Dimethyl phosphite 930-22-3, 3,4-Epoxy-1-butene 930-27-8, 3-Methylfuran 1321-11-5, Aminobenzoic acid 1809-19-4, Dibutyl phosphite 1809-20-7, Diisopropyl phosphite **1912-83-0** 2211-94-1, 2,3-Epoxypropyl 4-methoxyphenyl ether 2224-15-9, Ethylene glycol diglycidyl ether 2234-82-4, Propylmagnesium chloride 2386-64-3, Ethylmagnesium chloride 2404-44-6, 1,2-Epoxydecane 2633-75-2, Ethylzinc chloride 2921-15-5 2999-74-8, Dimethylmagnesium 3132-64-7, Epibromohydrin 3658-48-8, Bis(2-ethylhexyl) phosphite 4436-24-2 5158-46-3, Methylzinc chloride 5296-40-2 5536-61-8 7390-81-0, 1,2-Epoxyoctadecane 7783-61-1, Silicon tetrafluoride 7789-57-3, Tribromosilane 7789-66-4, Silicon tetrabromide 9002-89-5, Polyvinyl alcohol 10025-78-2, Trichlorosilane 10026-04-7, Silicon tetrachloride 10192-85-5, Potassium acrylate 13465-74-2, Bromotrichlorosilane 13465-84-4, Silicon tetraiodide 19600-63-6, 1,2-Epoxy-7-octene 21302-09-0, Dilauryl phosphite 25088-57-7, Dioleyl phosphite 25103-12-2, Triisooctyl phosphite 25265-71-8, Dipropylene glycol 26249-20-7, Butylene oxide 26471-62-5, Tolylene diisocyanate 27215-10-7, Diisooctyl phosphate 36432-46-9, Di(tridecyl) phosphite 42394-05-8, 13-Oxabicyclo[10.1.0]tridecadiene 44210-73-3, Butylborane 200574-47-6

(prepn. of org. silicon and phosphorus contg. compds. utilized as coating agents, adhesives, surfactants, insecticides, **hydraulic fluid** and other uses)

IT 7440-21-3DP, Silicon, org. compd. contg. phosphorus and, preparation 7723-14-0DP, Phosphorus, org. compd. contg. silicon and, preparation

(prepn. of org. silicon and phosphorus contg. compds. utilized as coating agents, adhesives, surfactants, insecticides, **hydraulic fluid** and other uses)

L54 ANSWER 6 OF 26 HCA COPYRIGHT 2005 ACS on STN
125:301238 Production of organic silicon-phosphorus containing compositions for use as flame retardants, **hydraulic fluid**, building components, coating agents, adhesives, etc.. Blount, David H. (USA). U.S. US 5563285 A **19961008**, 9 pp. (English). CODEN: USXXAM. APPLICATION: US 1993-160176 19931202.

AB A mixt. of Si and P is reacted with halides to produce Si tetrahalide, Si-P halides and P trihalide compn. This compn. is reacted with any suitable org. or inorg.-org. compd. which has an active H, halide and/or a metal radical to produce org. Si-P halides compns. which will react with inorg., inorg.-org. and org. compd. to produce an org. Si-P product. For example, equal parts by wt. of powd. Si and P are mixed, then the mixt. is heated until the P is melted, then heated to just below the P b.p., in a closed vessel; then dry Cl2 is passed over the hot Si and P mixt. until a mixt. of SiCl4, PCl3 and Si-P chlorides is produced; 50 parts by wt. of MeOH is reacted with 20 parts of the previously-prepd. mixt. to give unknown products. Other examples comprise substituting many org. compds. for MeOH, e.g. alcs., epoxides, unsatd. compds., polycarboxylic acid anhydrides. These products may be used (no data given on effectiveness) as flame-retardants, **hydraulic fluid**, building components, coating agents, adhesives and many other uses. The claims comprise mixing and reacting SiCl4, PCl3, and a Grignard reagent such that halogen atoms are left on the Si and/or P radicals.

IT **110-63-4**, 1,4-Butanediol, reactions **124-04-9**, Hexanedioic acid, reactions
(prodn. of org. silicon-phosphorus contg. compns. flame retardants and **hydraulic fluid** and building components and coating agents and adhesives)

RN 110-63-4 HCA
CN 1,4-Butanediol (8CI, 9CI) (CA INDEX NAME)

$HO-(CH_2)_4-OH$

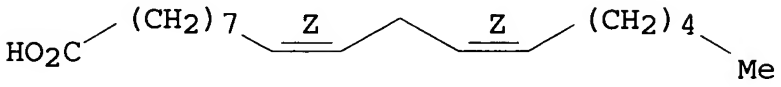
RN 124-04-9 HCA
CN Hexanedioic acid (9CI) (CA INDEX NAME)

$HO_2C-(CH_2)_4-CO_2H$

IT **60-33-3**, 9,12-Octadecadienoic acid (9Z,12Z)-, reactions
(prodn. of org. silicon-phosphorus contg. compns. for flame retardants and **hydraulic fluid** and building components and coating agents and adhesives)

RN 60-33-3 HCA
CN 9,12-Octadecadienoic acid (9Z,12Z)- (9CI) (CA INDEX NAME)

Double bond geometry as shown.



IC ICM C07F007-08
INCL 556404000
CC 29-7 (Organometallic and Organometalloidal Compounds)
Section cross-reference(s): 37, 42, 78
ST phosphorus silicon org compn prepn; flame retardant phosphorus silicon org compn; **hydraulic fluid** phosphorus silicon org compn; building component phosphorus silicon org compn; coating agent phosphorus silicon org compn; adhesive phosphorus silicon org compn; carboxylic acid
IT Adhesives
Building materials
Coating materials
Fireproofing agents
Hydraulic fluids
(prodn. of org. silicon-phosphorus contg. compns. as potential)
IT Creosote
(prodn. of org. silicon-phosphorus contg. compns. flame retardants and **hydraulic fluid** and building components and coating agents adhesives)
IT Castor oil
Epoxy resins, reactions
Linseed oil
(prodn. of org. silicon-phosphorus contg. compns. flame retardants and **hydraulic fluid** and building components and coating agents and adhesives)
IT Polyesters, reactions
(unsatd., prodn. of org. silicon-phosphorus contg. compns. flame retardants and **hydraulic fluid** and building components and coating agents and adhesives)
IT 9005-32-7, Alginic acid
(prodn. of org. silicon-phosphorus contg. compns. flame retardants and **hydraulic fluid** and building components and coating agent and adhesives)
IT 67-56-1, Methanol, reactions 67-63-0, 2-Propanol 67-64-1, 2-Propanone, reactions 71-23-8, 1-Propanol, reactions 71-36-3, 1-Butanol, reactions 74-86-2, Ethyne, reactions 74-87-3 74-93-1, Methanethiol, reactions 75-07-0, Acetaldehyde, reactions 75-12-7, Formamide, reactions 75-15-0, Carbon disulfide, reactions

75-21-8, Oxirane, reactions 75-56-9 75-87-6 78-51-3 78-79-5
78-83-1 78-90-0, 1,2-Propanediamine 79-09-4, Propanoic acid,
reactions 79-10-7, 2-Propenoic acid, reactions 79-41-4
85-44-9, 1,3-Isobenzofurandione 88-12-0 88-99-3,
1,2-Benzenedicarboxylic acid, reactions 96-24-2 98-00-0,
2-Furanmethanol 98-01-1, 2-Furancarboxaldehyde, reactions
100-52-7, Benzaldehyde, reactions 105-60-2 106-88-7 106-89-8
106-92-3 106-99-0, 1,3-Butadiene, reactions 107-02-8,
2-Propenal, reactions 107-10-8, 1-Propanamine, reactions
107-13-1, 2-Propenenitrile, reactions 107-18-6, 2-Propen-1-ol,
reactions 107-19-7, 2-Propyn-1-ol 107-21-1, 1,2-Ethanediol,
reactions 108-05-4, Acetic acid ethenyl ester, reactions
108-30-5 108-31-6, 2,5-Furandione, reactions 108-78-1,
1,3,5-Triazine-2,4,6-triamine, reactions 108-95-2, Phenol,
reactions 109-53-5 110-15-6, Butanedioic acid, reactions
110-16-7, 2-Butenedioic acid (2Z)-, reactions 110-17-8,
2-Butenedioic acid (2E)-, reactions **110-63-4**,
1,4-Butanediol, reactions 111-20-6, Decanedioic acid, reactions
111-40-0 111-46-6 121-44-8 122-60-1 123-72-8, Butanal
123-99-9, Nonanedioic acid, reactions **124-04-9**,
Hexanedioic acid, reactions 124-09-4, 1,6-Hexanediamine, reactions
126-99-8 461-58-5 503-09-3 593-74-8 676-58-4 868-85-9
930-27-8 1321-11-5 1344-08-7, Sodium sulfide (Na2(Sx))
1762-95-4 2224-15-9 2404-44-6 3068-00-6, 1,2,4-Butanetriol
3132-64-7 3586-58-1 4170-30-3, 2-Butenal 4436-24-2
5329-14-6, Sulfamic acid 7439-95-4, Magnesium, reactions
7440-21-3, Silicon 7440-66-6, Zinc 7664-38-2, Phosphoric acid,
reactions 7719-12-2, Phosphorous trichloride 7723-14-0,
Phosphorus, reactions 7782-50-5, Chlorine, reactions 9002-89-5
9004-34-6, Cellulose, reactions 10025-87-3, Phosphoric
trichloride, reactions 10026-04-7 10043-22-8 15347-57-6
25068-38-6 25322-69-4 26471-62-5 26545-55-1, Propanediamine
26764-44-3 30525-89-4, Paraformaldehyde 30899-19-5, Pentanol
35898-62-5 91717-85-0, 1,2,10-Decanetriol
(prodn. of org. silicon-phosphorus contg. compns. flame
retardants and **hydraulic fluid** and building
components and coating agents and adhesives)

IT 50-00-0, Formaldehyde, reactions 50-81-7, L-Ascorbic acid,
reactions 56-40-6, Glycine, reactions 56-81-5,
1,2,3-Propanetriol, reactions 57-13-6, Urea, reactions 57-55-6,
1,2-Propanediol, reactions **60-33-3**, 9,12-Octadecadienoic
acid (9Z,12Z)-, reactions 62-53-3, Benzenamine, reactions
62-56-6, Thiourea, reactions 64-17-5, Ethanol, reactions
64-19-7, Acetic acid, reactions 65-85-0, Benzoic acid, reactions
(prodn. of org. silicon-phosphorus contg. compns. for flame
retardants and **hydraulic fluid** and building
components and coating agents and adhesives)

L54 ANSWER 7 OF 26 HCA COPYRIGHT 2005 ACS on STN
123:233152 **Lubricating** oil compositions containing refined ester compounds. Nakahara, Makoto; Eto, Mitsuaki; Fujii, Katsuhiro (Sanken Kako Kk, Japan). Jpn. Kokai Tokkyo Koho JP 07145396 A2 **19950606** Heisei, 7 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1993-318953 19931124.

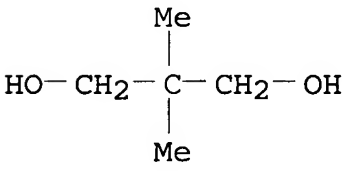
AB The compns. contain ester compds. refined by metal hydrides or metal hydrogen complex compds. (e.g., Na borohydrides). The ester compds. may be prepd. from hydroxycarboxylic acid polyol esters, .gtoreq.1 monocarboxylic acids, and optionally multivalent carboxylic acids and multivalent alcs. The compns., esp. suitable for refrigerator oils using H-contg. fluoroalkanes as coolants, have good hydrolysis resistance and thermal stability.

IT **124-04-9DP**, Adipic acid, esters with neopentyl glycol and methylhexanoic acid **126-30-7DP**, Neopentylglycol, esters with adipic acid and methylhexanoic acid **142-62-1DP**, Caproic acid, esters with pentaerythritol and ethylhexanoic acid **3302-10-1DP**, 3,5,5-Trimethylhexanoic acid, esters with trimethylolpropane **4536-23-6DP**, 2-Methylhexanoic acid, esters with neopentyl glycol and adipic acid
(**lubricating** oil compns. contg. ester compds. refined by metal hydrides or metal hydrogen complexes for hydrolysis resistance and thermal stability)

RN 124-04-9 HCA
CN Hexanedioic acid (9CI) (CA INDEX NAME)

$HO_2C-(CH_2)_4-CO_2H$

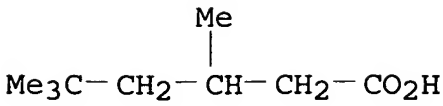
RN 126-30-7 HCA
CN 1,3-Propanediol, 2,2-dimethyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



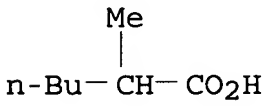
RN 142-62-1 HCA
CN Hexanoic acid (8CI, 9CI) (CA INDEX NAME)

$Me-(CH_2)_4-CO_2H$

RN 3302-10-1 HCA
CN Hexanoic acid, 3,5,5-trimethyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 4536-23-6 HCA
CN Hexanoic acid, 2-methyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



IC ICM C10M105-38
ICA C10M105-42
ICI C10N030-00, C10N030-08, C10N040-30, C10N060-02
CC 51-8 (Fossil Fuels, Derivatives, and Related Products)
ST **lubricating** oil ester refining refrigerator; metal hydride ester refining **lubricant**; complex metal hydrogen refining **lubricant**
IT **Lubricating** oils
Refrigerating apparatus
(**lubricating** oil compns. contg. ester compds. refined by metal hydrides or metal hydrogen complexes for hydrolysis resistance and thermal stability)
IT Esters, preparation
(**lubricating** oil compns. contg. ester compds. refined by metal hydrides or metal hydrogen complexes for hydrolysis resistance and thermal stability)
IT 13762-51-1, Potassium borohydride 16883-45-7, Tetramethylammonium borohydride 16940-17-3, Sodium trimethoxyborohydride 16940-66-2, Sodium borohydride
(**lubricating** oil compns. contg. ester compds. refined by metal hydrides or metal hydrogen complexes for hydrolysis resistance and thermal stability)
IT 77-99-6DP, Trimethylolpropane, esters with 3,5,5-trimethylhexanoic acid 115-77-5DP, Pentaerythritol, esters with caproic acid and ethylhexanoic acid **124-04-9DP**, Adipic acid, esters with neopentyl glycol and methylhexanoic acid **126-30-7DP**, Neopentylglycol, esters with adipic acid and methylhexanoic acid **142-62-1DP**, Caproic acid, esters with pentaerythritol and ethylhexanoic acid 1115-20-4DP, Hydroxypivalic acid neopentyl glycol ester, esters with adipic acid and ethylhexanoic acid **3302-10-1DP**, 3,5,5-Trimethylhexanoic acid, esters with trimethylolpropane **4536-23-6DP**, 2-Methylhexanoic acid, esters with neopentyl glycol and adipic acid
(**lubricating** oil compns. contg. ester compds. refined

by metal hydrides or metal hydrogen complexes for hydrolysis resistance and thermal stability)

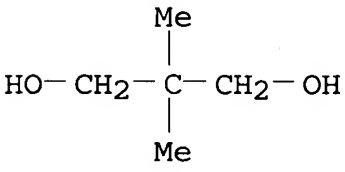
L54 ANSWER 8 OF 26 HCA COPYRIGHT 2005 ACS on STN
122:243914 Additives for refrigerating compressor oils and the oil compositions. Tada, Juji; Akata, Atsuo (Otsuka Kagaku Kk, Japan). Jpn. Kokai Tokkyo Koho JP 06287586 A2 **19941011** Heisei, 15 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1993-100469 19930402.

AB The additives are acetals, ketals, or esters of formula R1C(OR2)(OR3)XR4 [R1-4 = C1-15 alkyl, alkyloxyalkyl, aryloxyalkyl, fluoroalkyl, fluoroalkyloxyalkyl, fluoroaryl; R1 may be H; X = O or may not exist]. The oil compns. comprise the additive and a synthetic base oil such as esters, ethers, fluorohydrocarbons, phosphate esters, and/or silicone oils. The oils have high compatibility with Cl-free fluoroalkanes (e.g., HFC 134a), high decompn. resistance, high durability, and inhibit sludges formation, and does not deteriorate elec. insulation.

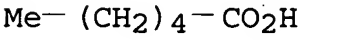
IT **124-04-9D**, Hexanedioic acid, reaction products with neopentylglycol and caproic acid **126-30-7D**, reaction products with adipic acid and caproic acid **142-62-1D**, Caproic acid, reaction products with polyfunctional alcs. and monovalent carboxylic acids
(compressor oil component; acetals or ketals or orthoesters as refrigerating compressor oil additives used with chlorine-free fluorohydrocarbon coolants)

RN 124-04-9 HCA
CN Hexanedioic acid (9CI) (CA INDEX NAME)

RN 126-30-7 HCA
CN 1,3-Propanediol, 2,2-dimethyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

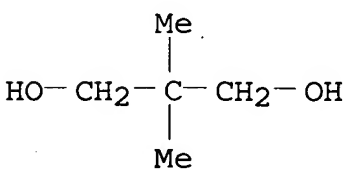


RN 142-62-1 HCA
CN Hexanoic acid (8CI, 9CI) (CA INDEX NAME)



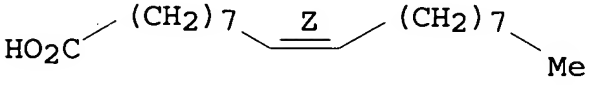
IC ICM C10M169-04
ICI C10M169-04, C10M105-32, C10M129-16, C10M105-18, C10M105-76, C10M105-74; C10N030-02, C10N030-08, C10N040-16, C10N040-30
CC 51-8 (Fossil Fuels, Derivatives, and Related Products)
IT **Lubricating** oil additives
(refrigerating compressor oil additives as acetals or ketals or orthoesters used with chlorine-free fluorohydrocarbon coolants)
IT 115-77-5D, reaction products with polyfunctional alcs. and carboxylic acids 116-53-0D, 2-Methylbutanoic acid, reaction products with polyfunctional alcs. and carboxylic acids **124-04-9D**, Hexanedioic acid, reaction products with neopentylglycol and caproic acid **126-30-7D**, reaction products with adipic acid and caproic acid **142-62-1D**, Caproic acid, reaction products with polyfunctional alcs. and monovalent carboxylic acids 9003-13-8 16059-16-8 25736-79-2 25791-96-2 106796-59-2 137158-09-9 162354-52-1
(compressor oil component; acetals or ketals or orthoesters as refrigerating compressor oil additives used with chlorine-free fluorohydrocarbon coolants)

L54 ANSWER 9 OF 26 HCA COPYRIGHT 2005 ACS on STN
122:34985 **Hydraulic fluids** with improved sealant compatibility. Bongardt, Frank; Schmid, Karl-Heinz; Bossmann, Britta (Henkel K.-G.a.A., Germany). Ger. Offen. DE 4313948 A1 **19941103**, 7 pp. (German). CODEN: GWXXBX. APPLICATION: DE 1993-4313948 19930428.
AB The **hydraulic fluids** are based on polyol oleic acid esters, e.g., neopentyl glycol, trimethylol propane, pentaerythritol, dipentaerythritol, and/or their mixts., and contain dicarboxylic acid esters of C12-36 alcs., e.g., 2-hexyldecanol, 2-heptylundecanol, 2-octyldodecanol, 2-nonyltridecanol, and/or 2-decyltetradecanol, with or without complexed esters of polyols, dicarboxylic acids, and monocarboxylic acids, e.g., adipic acid and/or dimeric fatty acids and trimethylol propane and/or pentaerythritol and C6-22 aliph. monocarboxylic acids. The fluids have improved sealant compatibility.
IT **126-30-7**, Neopentyl glycol
(base **oil**; **hydraulic fluids** with improved sealant compatibility)
RN 126-30-7 HCA
CN 1,3-Propanediol, 2,2-dimethyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

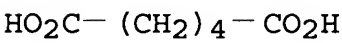


IT **112-80-1D**, Oleic acid, esters **124-04-9D**, Adipic acid, esters
(**hydraulic fluids** with improved sealant compatibility)
RN 112-80-1 HCA
CN 9-Octadecenoic acid (9Z)- (9CI) (CA INDEX NAME)

Double bond geometry as shown.



RN 124-04-9 HCA
CN Hexanedioic acid (9CI) (CA INDEX NAME)

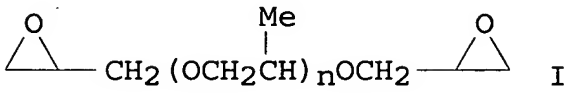


IC ICM C10M129-68
ICA B60K017-06
ICI C10M129-68, C10M129-72, C10M129-78; C10M129-68, C10M105-38; C10N040-08, C10N030-02
CC 51-8 (Fossil Fuels, Derivatives, and Related Products)
ST **hydraulic fluid** sealant compatibility
IT **Hydraulic fluids**
(**hydraulic fluids** with improved sealant compatibility)
IT 77-99-6, Trimethylol propane 115-77-5, Pentaerythritol, uses **126-30-7**, Neopentyl glycol 126-58-9, Dipentaerythritol
(base **oil**; **hydraulic fluids** with improved sealant compatibility)
IT **112-80-1D**, Oleic acid, esters **124-04-9D**, Adipic acid, esters 2425-77-6D, 2-Hexyldecanol, dicarboxylic acid esters 5333-42-6D, 2-Octyldodecanol, dicarboxylic acid esters 5333-44-8D, 2-Heptylundecanol, dicarboxylic acid esters 54439-52-0D, dicarboxylic acid esters 57675-44-2, Trimethylol propane trioleate 58670-89-6D, 2-Decyltetradecanol, dicarboxylic acid esters 134019-32-2D, esters 142782-21-6 159940-23-5
(**hydraulic fluids** with improved sealant compatibility)

L54 ANSWER 10 OF 26 HCA COPYRIGHT 2005 ACS on STN
121:208944 Working fluid compositions for refrigerators. Okita, Takeshi; Kato, Tadanori; Saito, Haruo (Nippon San Sekyu Kk, Japan). Jpn. Kokai Tokkyo Koho JP 06001970 A2 **19940111** Heisei, 7

pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1992-184673 19920619.

GI



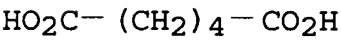
I

AB Title compns. comprise refrigeration oils contg. 100 parts esters obtained from aliph. polyhydric alcs. contg. 1-6 primary OH groups, C2-9 linear or branched satd. aliph. monocarboxylic acids or their derivs., and C2-10 linear or branched satd. aliph. dicarboxylic acids or their derivs. and 0.1-10.0 parts glycidyl ethers, typically I (n = 1-20), with .ltoreq.1.0% Cl content and hydrofluorocarbons, typically 1,1,1,2-tetrafluoroethane (HFC 134a), and optionally 0.1-5.0 parts phenolic **antioxidant** (for example, 2,6-di-tert-butylphenol or 2,6-di-tert-butyl-4-methylphenol). The aliph. polyhydric alcs. may have 2-30 C atoms and 2-6 OH groups and 1 mol of the alcs. is treated with .ltoreq.0.9 mol aliph. satd. dicarboxylic acids or derivs. to give esters with acid value .ltoreq.0.1 mgKOH/g and OH value 1-50 mg KOH/g. Thus, the reaction of neopentyl glycol 1, adipic acid 0.43, and 2-methylhexanoic acid 1.06 mol gave an ester with viscosity 23.9 cSt at 40.degree. and 5.01 cSt at 100.degree., acid value 0.01, and OH value 16.6. A mixt. of 70 g of refrigeration oil contg. the ester 100, I (n = 8) with 0.32% Cl 0.2, and DBPC 0.2 part and 70 g HFC 134a as refrigerant showed color (as L) 0.5 and acid value 0.02 and produced no deposit nor change in catalyst when kept in a stainless steel bomb with a catalyst such as Fe, Cu, or Al at 175.degree. for 40 h. A mixt. of 200 cm3 of the ester and 100 cm3 HFC 134a formed no sludge and caused no abrasion of the sliding part when tested in a system similar to a home refrigerator.

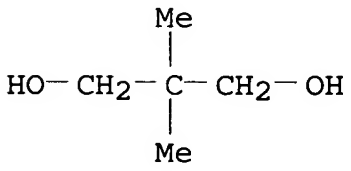
IT **124-04-9DP**, Adipic acid, esterification products with neopentyl glycol and 2-methylhexanoic acid **126-30-7DP**, Neopentyl glycol, esterification products with adipic acid and 2-methylhexanoic acid **4536-23-6DP**, 2-Methylhexanoic acid, esterification products with neopentyl glycol and adipic acid
(prepn. of, working fluids contg. glycidyl ethers and HFC 134a and, for refrigerators)

RN 124-04-9 HCA

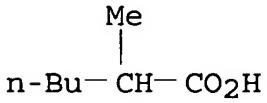
CN Hexanedioic acid (9CI) (CA INDEX NAME)



RN 126-30-7 HCA
CN 1,3-Propanediol, 2,2-dimethyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 4536-23-6 HCA
CN Hexanoic acid, 2-methyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



IC ICM .C09K005-04
CC 51-8 (Fossil Fuels, Derivatives, and Related Products)
ST working fluid refrigerator; ester epoxide fluorocarbon working fluid; glycidyl ether working fluid refrigerator; tetrafluoroethane refrigerant working fluid refrigerator; **antioxidant** phenol working fluid refrigerator
IT Phenols, uses
(**antioxidants**, working fluids contg., for refrigerators)
IT **Antioxidants**
(phenols, working fluids contg., for refrigerators)
IT 128-37-0, uses 128-39-2, 2,6-Di-tert-butylphenol
(**antioxidant**, working fluids contg., for refrigerators)
IT **124-04-9DP**, Adipic acid, esterification products with neopentyl glycol and 2-methylhexanoic acid **126-30-7DP**, Neopentyl glycol, esterification products with adipic acid and 2-methylhexanoic acid **4536-23-6DP**, 2-Methylhexanoic acid, esterification products with neopentyl glycol and adipic acid
(prepn. of, working fluids contg. glycidyl ethers and HFC 134a and, for refrigerators)

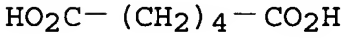
L54 ANSWER 11 OF 26 HCA COPYRIGHT 2005 ACS on STN
121:87387 Refrigerator working fluid compositions. Hagiwara, Tosha; Sakai, Akimitsu (Kao Corp, Japan). Jpn. Kokai Tokkyo Koho JP 05331474 A2 **19931214** Heisei, 13 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1992-210861 19920714. PRIORITY: JP 1992-105940 19920330.
AB Working fluid compns. for refrigerators comprise hydrofluorocarbons and ester base oils (I no. <1 g/100 g) selected from .gtoreq.1 of (A) esters prepd. from (a) aliph. polyhydric alcs. having 1-6

primary hydroxyl groups and (b) C2-9 straight or branched-chain satd. aliph. monocarboxylic acids or their derivs., (B) esters obtained from (a) aliph. polyhydric alcs. having 1-6 primary hydroxyl groups, (b) C2-9 straight or branched-chain satd. aliph. monocarboxylic acids or their derivs., and (c) C2-10 straight or branched-chain satd. aliph. dicarboxylic acids or their derivs., and (C) esters prepd. from (a) aliph. polyhydric alcs. having 1-6 primary hydroxyl groups, (d) C1-10 straight or branched-chain satd. aliph. monovalent alcs., and (e) C2-10 multivalent carboxylic acids or their derivs.

IT **124-04-9D**, Adipic acid, esters with neopentyl glycol and 2-methylhexanoic acid **126-30-7D**, Neopentyl glycol, esters with adipic acid and 2-methylhexanoic acid **149-57-5D**, 2-Ethylhexanoic acid, esters with 2-methylhexanoic acid and pentaerythritol **3302-10-1D**, 3,5,5-Trimethylhexanoic acid, esters with 2-methyhexanoic acid, trimethylolpropane and 2-ethylpentanoic acid **4536-23-6D**, 2-Methylhexanoic acid, mixed esters **20225-24-5D**, 2-Ethylpentanoic acid, esters with 2-methyhexanoic acid, trimethylolpropane and 3,5,5-trimethylhexanoic acid
(working fluids contg., for refrigerators)

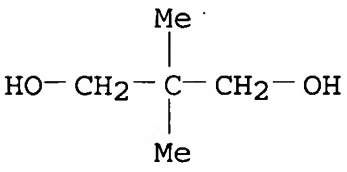
RN 124-04-9 HCA

CN Hexanedioic acid (9CI) (CA INDEX NAME)



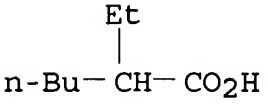
RN 126-30-7 HCA

CN 1,3-Propanediol, 2,2-dimethyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



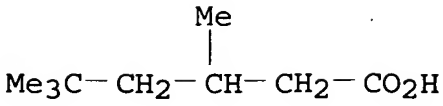
RN 149-57-5 HCA

CN Hexanoic acid, 2-ethyl- (8CI, 9CI) (CA INDEX NAME)

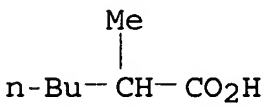


RN 3302-10-1 HCA

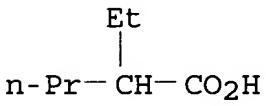
CN Hexanoic acid, 3,5,5-trimethyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 4536-23-6 HCA
CN Hexanoic acid, 2-methyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 20225-24-5 HCA
CN Pentanoic acid, 2-ethyl- (9CI) (CA INDEX NAME)



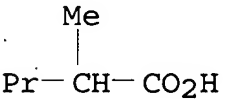
IC ICM C10M105-38
ICS C10M105-42
ICI C10N020-00, C10N030-08, C10N040-30
CC 51-8 (Fossil Fuels, Derivatives, and Related Products)
IT **Lubricating** oils
(mixed esters, working fluids contg. hydrofluorocarbons and, for refrigerators)
IT 77-99-6D, Trimethylolpropane, mixed esters 115-76-4D, 2,2-Diethyl-1,3-propanediol, esters with di-Me phthalate and 2-methylhepanol 115-77-5D, Pentaerythritol, esters with 2-methylhexanoic acid and 2-ethylhexanoic acid **124-04-9D**, Adipic acid, esters with neopentyl glycol and 2-methylhexanoic acid **126-30-7D**, Neopentyl glycol, esters with adipic acid and 2-methylhexanoic acid 131-11-3D, Dimethyl phthalate, esters with 2,2-diethyl-1,3-propanediol and 2-methylhepanol **149-57-5D**, 2-Ethylhexanoic acid, esters with 2-methylhexanoic acid and pentaerythritol **3302-10-1D**, 3,5,5-Trimethylhexanoic acid, esters with 2-methyhexanoic acid, trimethylolpropane and 2-ethylpentanoic acid **4536-23-6D**, 2-Methylhexanoic acid, mixed esters **20225-24-5D**, 2-Ethylpentanoic acid, esters with 2-methyhexanoic acid, trimethylolpropane and 3,5,5-trimethylhexanoic acid 26086-33-9, Trimethylolpropane tris(2-ethylhexanoate) 28510-23-8, Neopentyl glycol bis(2-ethylhexanoate) 60435-70-3D, 2-Methylheptanol, esters with 2,2-diethyl-1,3-propanediol and di-Me phthalate 154083-77-9
(working fluids contg., for refrigerators)

L54 ANSWER 12 OF 26 HCA COPYRIGHT 2005 ACS on STN
120:275216 Refrigerator working fluid compositions. Hagiwara, Tosha; Sakai, Akimitsu (Kao Corp, Japan). Jpn. Kokai Tokkyo Koho JP 06009978 A2 **19940118** Heisei, 13 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1992-191544 19920624.

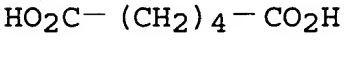
AB Compression-type refrigerator working fluids using HFC 32 as refrigerant comprise ester base oils selected from .gtoreq.1 of (A) esters derived from (a) C2-10 aliph. divalent alcs., (b) C4-9 branched satd. aliph. monocarboxylic acids or their derivs., and (c) C4-6 straight or branched satd. aliph. dicarboxylic acids or their derivs. and (B) esters derived from (a) C2-10 aliph. divalent alcs., (d) C3-10 branched satd. aliph. monovalent alcs., and (c) C4-6 straight or branched satd. aliph. dicarboxylic acids or their derivs.

IT **97-61-0D**, mixed esters **124-04-9D**, Hexanedioic acid, mixed esters **126-30-7D**, mixed esters **628-46-6D**, mixed esters **3780-58-3D**, mixed esters **4536-23-6D**, mixed esters
(base oils contg., for refrigerator working fluids, with HFC 32)

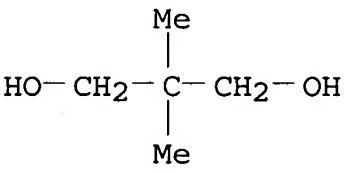
RN 97-61-0 HCA
CN Pentanoic acid, 2-methyl- (9CI) (CA INDEX NAME)



RN 124-04-9 HCA
CN Hexanedioic acid (9CI) (CA INDEX NAME)



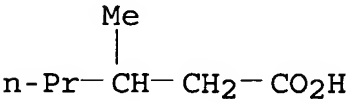
RN 126-30-7 HCA
CN 1,3-Propanediol, 2,2-dimethyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



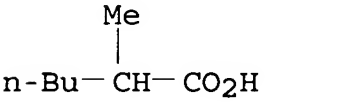
RN 628-46-6 HCA
CN Hexanoic acid, 5-methyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

$HO_2C-(CH_2)_3-CHMe_2$

RN 3780-58-3 HCA
CN Hexanoic acid, 3-methyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 4536-23-6 HCA
CN Hexanoic acid, 2-methyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



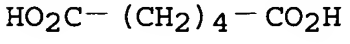
IC ICM C10M105-42
ICS C09K005-04
ICI C10N020-02, C10N030-00, C10N030-08, C10N040-16, C10N040-30
CC 51-8 (Fossil Fuels, Derivatives, and Related Products)
ST refrigerator working fluid compn; **lubricating** oil ester refrigerator
IT **Lubricating** oils
(esters, for refrigerator working fluids using HFC 32 refrigerant)
IT 88-99-3D, 1,2-Benzenedicarboxylic acid, mixed esters **97-61-0D**, mixed esters 115-76-4D, mixed esters **124-04-9D**, Hexanedioic acid, mixed esters **126-30-7D**, mixed esters **628-46-6D**, mixed esters **3780-58-3D**, mixed esters **4536-23-6D**, mixed esters 154636-17-6 154636-39-2 154636-40-5 154636-52-9
(base oils contg., for refrigerator working fluids, with HFC 32)

L54 ANSWER 13 OF 26 HCA COPYRIGHT 2005 ACS on STN
119:163844 **Lubricating** oils for refrigerators. Kaimai, Takashi; Yano, Hisashi (Kyoseki Seihin Gijutsu Kenkyusho K. K., Japan). Jpn. Kokai Tokkyo Koho JP 05017789 A2 **19930126** Heisei, 6 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1991-194849 19910709.
AB The **lubricating** oils comprise a synthetic ester of C5-15 polyol with C3-12 monovalent fatty acid and/or C4-14 polybasic carboxylic acid. The ester oil shows high thermal stability and miscibility to R-23 or R-125. Thus, a neopentyl glycol-2-ethylhexanoic acid ester was used as a durable

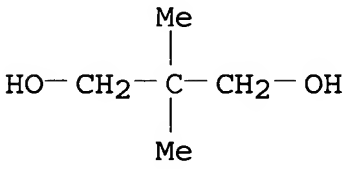
lubricating oil with kinematic viscosity 2 cSt at 100.degree. and high miscibility to R-23 for refrigerator.

IT **124-04-9D**, Adipic acid, mixed esters **126-30-7D**, Neopentyl glycol, mixed esters **149-57-5D**, 2-Ethylhexanoic acid, mixed esters
(**lubricating** base oils, highly-miscible, for refrigerators)

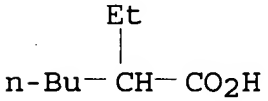
RN 124-04-9 HCA
CN Hexanedioic acid (9CI) (CA INDEX NAME)



RN 126-30-7 HCA
CN 1,3-Propanediol, 2,2-dimethyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 149-57-5 HCA
CN Hexanoic acid, 2-ethyl- (8CI, 9CI) (CA INDEX NAME)

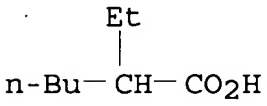


IC ICM C10M105-38
ICS C10M105-42; C10M105-44
ICI C10N020-00, C10N040-30
CC 51-8 (Fossil Fuels, Derivatives, and Related Products)
ST refrigerator **lubricating** oil synthetic ester; miscibility ester refrigerant **lubricating** oil
IT **Lubricating** oils
(base oils, esters miscible with R-23 as, for refrigerators)
IT 109-52-4D, Valeric acid, mixed esters **124-04-9D**, Adipic acid, mixed esters **126-30-7D**, Neopentyl glycol, mixed esters **149-57-5D**, 2-Ethylhexanoic acid, mixed esters 7299-99-2 28510-23-8 149659-86-9 150053-53-5 150260-76-7
(**lubricating** base oils, highly-miscible, for refrigerators)
IT 75-46-7 354-33-6, R-125
(refrigerant, ester-based **lubricating** oils miscible with, for refrigerators)

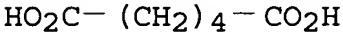
L54 ANSWER 14 OF 26 HCA COPYRIGHT 2005 ACS on STN
119:121070 Refrigerator oil compositions. Kaimai, Takashi; Yano, Hisashi (Kyoseki Seihin Gijutsu Kenk, Japan). Jpn. Kokai Tokkyo Koho JP 05032985 A2 **19930209** Heisei, 6 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1991-208861 19910726.

AB Refrigerator oil compns. comprise (a) ester oils prepd. from C1-15 polyhydric alcs. and C3-18 monovalent fatty acids and/or complex ester oils prepd. from C5-15 polyhydric alcs. and mixed acids of C3-18 monovalent fatty acids and C4-14 polybasic acids and (b) polyether compds. having av mol. wt. 300-2000 and the general formula R[O(PO)l(EO)mR1]n (R = C1-10 satd. hydrocarbyl group having valence n, PO = oxypropylene, EO = oxyethylene, R1 = H or alkyl group, the C no. of R and R1 .ltoreq.10, l .gtoreq.1 integers, m = 0 or .ltoreq.l, and n = 1-6 integer) as major components and refrigerants contg. trifluoromethane and/or pentafluoroethane. The refrigerants cal also contain R 152a and/or R 134a.

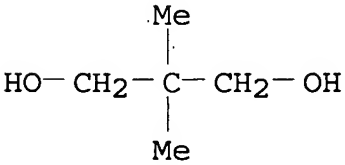
IT **149-57-5**, 2-Ethylhexanoic acid
(refrigerator oil compns. contg. esters and, with refrigerants)
RN 149-57-5 HCA
CN Hexanoic acid, 2-ethyl- (8CI, 9CI) (CA INDEX NAME)



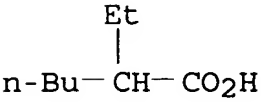
IT **124-04-9D**, Adipic acid, mixed esters **126-30-7D**, Neopentyl glycol, mixed esters **149-57-5D**, 2-Ethylhexanoic acid, mixed esters
(refrigerator oil compns. contg. polyethers and, with refrigerants)
RN 124-04-9 HCA
CN Hexanedioic acid (9CI) (CA INDEX NAME)



RN 126-30-7 HCA
CN 1,3-Propanediol, 2,2-dimethyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



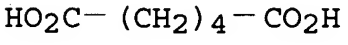
RN 149-57-5 HCA
CN Hexanoic acid, 2-ethyl- (8CI, 9CI) (CA INDEX NAME)



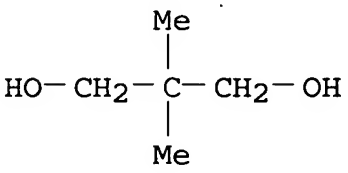
IC ICM C10M105-00
ICI C10M105-00, C10M105-38, C10M105-18; C10M105-00, C10M105-42, C10M105-18; C10N020-04, C10N040-30
CC 51-8 (Fossil Fuels, Derivatives, and Related Products)
ST refrigerator oil compn polyether ester; **lubricating** oil polyether ester refrigerator; refrigerant polyether ester refrigerator oil
IT **Lubricating** oils
(esters and polyethers, with refrigerants, for refrigerators)
IT Refrigerating apparatus
(**lubricating** oils for, esters and polyethers as, with refrigerants)
IT 75-10-5, R 32 (Refrigerant) 75-37-6, R 152a 75-46-7, Trifluoromethane 354-33-6, R 125 811-97-2, R 134a
(refrigerants contg., with polyether and ester **lubricants**, for refrigerating app.)
IT **149-57-5**, 2-Ethylhexanoic acid 9038-95-3 9063-06-3 24991-61-5 25736-79-2 61827-84-7 149614-97-1
(refrigerator oil compns. contg. esters and, with refrigerants)
IT 109-52-4D, Valeric acid, mixed esters **124-04-9D**, Adipic acid, mixed esters **126-30-7D**, Neopentyl glycol, mixed esters **149-57-5D**, 2-Ethylhexanoic acid, mixed esters 84286-75-9, Pentaerythritol 2-ethylhexanoate
(refrigerator oil compns. contg. polyethers and, with refrigerants)

L54 ANSWER 15 OF 26 HCA COPYRIGHT 2005 ACS on STN
118:257933 **Lubricating** oils for refrigerators. Hagiwara, Tosha; Sakai, Akimitsu (Kao Corp., Japan). Jpn. Kokai Tokkyo Koho JP 05025484 A2 **19930202** Heisei, 13 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1991-204885 19910720.
AB The **lubricating** oils comprise a synthetic ester base oil (base no. <5 KOH/g) selected from (1) ester of (a) polyols having 1-6 primary OH group(s) and (b) C2-9 satd. aliph. monocarboxylic acids; (2) ester of a, b, and (c) C2-10 satd. aliph. dicarboxylic acids; and (3) ester of a, (d) C1-10 satd. aliph. monoalcs., and (e) C2-10 polycarboxylic acids. The **lubricating** oils are highly miscible with hydrofluorocarbon refrigerants.
IT **124-04-9DP**, Hexanedioic acid, esters **126-30-7DP**, esters **4536-23-6DP**, esters

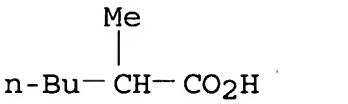
(**lubricating** base oils, prepn. of, for refrigerators)
RN 124-04-9 HCA
CN Hexanedioic acid (9CI) (CA INDEX NAME)



RN 126-30-7 HCA
CN 1,3-Propanediol, 2,2-dimethyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 4536-23-6 HCA
CN Hexanoic acid, 2-methyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



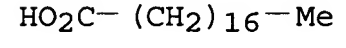
IC ICM C10M105-42
ICI C10N030-02, C10N040-30, C10N070-00
CC 51-8 (Fossil Fuels, Derivatives, and Related Products)
ST **lubricating** oil ester refrigerator
IT Refrigerating apparatus
(**lubricating** oils for, synthetic esters as)
IT **Lubricating** oils
(base oils, synthetic esters as, for refrigerators)
IT 104-76-7DP, esters 115-76-4DP, esters **124-04-9DP**, Hexanedioic acid, esters **126-30-7DP**, esters **4536-23-6DP**, esters 120147-15-1P 147335-79-3P 147602-15-1P 147602-17-3P 148045-44-7P 148045-45-8P 148045-46-9P 148045-48-1P 148045-50-5P
(**lubricating** base oils, prepn. of, for refrigerators)

L54 ANSWER 16 OF 26 HCA COPYRIGHT 2005 ACS on STN
118:237448 Neopentyl polyol esters as **lubricating** oils for refrigerators. Tsuruoka, Kuniaki; Takahashi, Fujio; Sei, Nobuhiko; Mori, Masato; Maeda, Kazuhito (Nippon Oil and Fats Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 04314793 A2 **19921105** Heisei, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1991-106397 19910412.
AB The title esters are prepd. from C.ltoreq.15 neopentyl polyols and

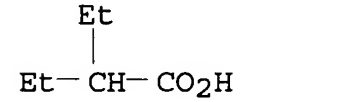
mixed acids of 50-100 mol% C3-18 fatty acids and 0-50 mol% C4-10 dicarboxylic acid, in which .gtoreq.50 mol% of total fatty acids are tertiary or secondary fatty acids. The esters show good hydrolysis resistance and good compatibility with chlorofluorocarbon coolants.

IT **57-11-4DP**, NAA 180, mixed esters with carboxylic acids and neopentyl polyols **88-09-5DP**, 2-Ethylbutyric acid, mixed esters with carboxylic acids and neopentyl polyols **124-04-9DP**, Adipic acid, mixed esters with fatty acids and neopentyl polyols **126-30-7DP**, Neopentyl glycol, mixed esters with fatty acids **149-57-5DP**, 2-Ethylhexanoic acid, mixed esters with carboxylic acids and neopentyl polyols **595-37-9DP**, 2,2-Dimethylbutanoic acid, mixed esters with carboxylic acids and neopentyl polyols **1185-39-3DP**, 2,2-Dimethylpentanoic acid, mixed esters with carboxylic acids and neopentyl polyols **3302-10-1DP**, 3,5,5-Trimethylhexanoic acid, mixed esters with carboxylic acids and neopentyl polyols **22890-21-7DP**, mixed esters with carboxylic acids and neopentyl polyols **29662-90-6DP**, 2,2-Dimethyloctanoic acid, mixed esters with carboxylic acids and neopentyl polyols **121579-98-4DP**, mixed esters with carboxylic acids and neopentyl polyols
(prepn. of, **lubricating** oils contg., hydrolysis-resistant, for refrigerators)

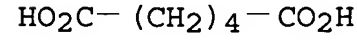
RN 57-11-4 HCA
CN Octadecanoic acid (9CI) (CA INDEX NAME)



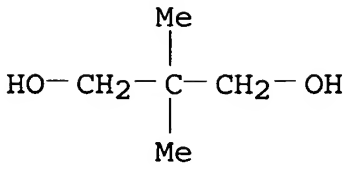
RN 88-09-5 HCA
CN Butanoic acid, 2-ethyl- (9CI) (CA INDEX NAME)



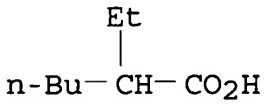
RN 124-04-9 HCA
CN Hexanedioic acid (9CI) (CA INDEX NAME)



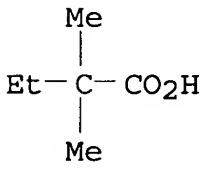
RN 126-30-7 HCA
CN 1,3-Propanediol, 2,2-dimethyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



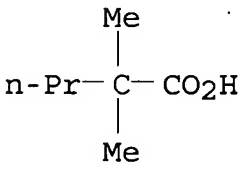
RN 149-57-5 HCA
CN Hexanoic acid, 2-ethyl- (8CI, 9CI) (CA INDEX NAME)



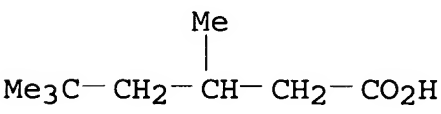
RN 595-37-9 HCA
CN Butanoic acid, 2,2-dimethyl- (9CI) (CA INDEX NAME)



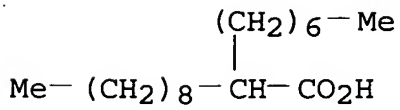
RN 1185-39-3 HCA
CN Pentanoic acid, 2,2-dimethyl- (9CI) (CA INDEX NAME)



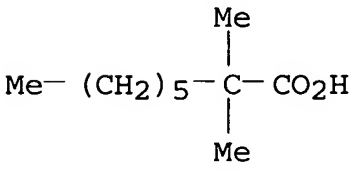
RN 3302-10-1 HCA
CN Hexanoic acid, 3,5,5-trimethyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



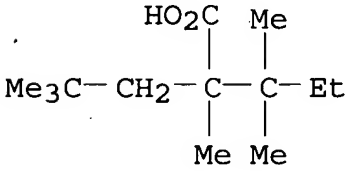
RN 22890-21-7 HCA
CN Undecanoic acid, 2-heptyl- (8CI, 9CI) (CA INDEX NAME)



RN 29662-90-6 HCA
CN Octanoic acid, 2,2-dimethyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 121579-98-4 HCA
CN Pentanoic acid, 2-(2,2-dimethylpropyl)-2,3,3-trimethyl- (9CI) (CA INDEX NAME)



IC ICM C10M105-42
ICS C10M105-44
ICI C10N030-00, C10N030-12, C10N040-30
CC 51-8 (Fossil Fuels, Derivatives, and Related Products)
ST neopentyl polyol ester **lubricating** oil; refrigerator **lubricating** oil neopentyl ester; hydrolysis resistance ester **lubricating** oil; fluorocarbon compatibility **lubricating** oil ester
IT Refrigerating apparatus
(**lubricating** oils for, neopentyl polyol esters as, hydrolysis-resistant)
IT **Lubricating** oils
(base oils, neopentyl polyol esters as, hydrolysis-resistant, for refrigerators)
IT Carboxylic acids, esters
(di-, esters, with neopentyl polyols and fatty acids, **lubricating** oils contg., for refrigerators)
IT Fatty acids, esters
(esters, with neopentyl polyols, **lubricating** oils contg., for refrigerators)
IT **57-11-4DP**, NAA 180, mixed esters with carboxylic acids and neopentyl polyols 75-98-9DP, 2,2-Dimethylpropanoic acid, mixed

esters with carboxylic acids and neopentyl polyols 77-99-6DP, Trimethylolpropane, mixed esters with fatty acids **88-09-5DP**, 2-Ethylbutyric acid, mixed esters with carboxylic acids and neopentyl polyols 109-52-4DP, Valeric acid, mixed esters with carboxylic acids and neopentyl polyols 110-15-6DP, Succinic acid, mixed esters with fatty acids and neopentyl polyols 110-94-1DP, Glutaric acid, mixed esters with fatty acids and neopentyl polyols 111-20-6DP, Sebacic acid, mixed esters with fatty acids and neopentyl polyols 115-77-5DP, Pentaerythritol, mixed esters with fatty acids 116-53-0DP, 2-Methylbutyric acid, mixed esters with carboxylic acids and neopentyl polyols **124-04-9DP**, Adipic acid, mixed esters with fatty acids and neopentyl polyols **126-30-7DP**, Neopentyl glycol, mixed esters with fatty acids 126-58-9DP, Dipentaerythritol, mixed esters with fatty acids **149-57-5DP**, 2-Ethylhexanoic acid, mixed esters with carboxylic acids and neopentyl polyols **595-37-9DP**, 2,2-Dimethylbutanoic acid, mixed esters with carboxylic acids and neopentyl polyols **1185-39-3DP**, 2,2-Dimethylpentanoic acid, mixed esters with carboxylic acids and neopentyl polyols **3302-10-1DP**, 3,5,5-Trimethylhexanoic acid, mixed esters with carboxylic acids and neopentyl polyols **22890-21-7DP**, mixed esters with carboxylic acids and neopentyl polyols **29662-90-6DP**, 2,2-Dimethyloctanoic acid, mixed esters with carboxylic acids and neopentyl polyols 42928-81-4P **121579-98-4DP**, mixed esters with carboxylic acids and neopentyl polyols
(prepn. of, **lubricating** oils contg., hydrolysis-resistant, for refrigerators)

L54 ANSWER 17 OF 26 HCA COPYRIGHT 2005 ACS on STN
118:150790 **Lubricating** oils for refrigerators. Kaimai, Takashi; Sasahara, Kenichi (Kyoseki Seikin Gijutsu Kenkyusho K. K., Japan; DuPont-Mitsui Fluorochemicals Co., Ltd.). Jpn. Kokai Tokkyo Koho JP 04270795 A2 **19920928** Heisei, 7 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1991-53454 19910225.

AB The title oils, used with MeCHF2-contg. refrigerants, comprise base oils contg. (A) 5-95 parts alkylbenzenes and (B) 5-95 parts esters of C5-15 polyols, C3-18 monovalent fatty acids, and optionally C4-14 polybasic acids. The oils have good compatibility to ozone layer-nondestructive fluorocarbon refrigerants.

IT **57-11-4D**, Stearic acid, mixed esters with polyols and fatty acids **124-04-9D**, Adipic acid, mixed esters with polyols and fatty acids **126-30-7D**, Neopentyl glycol, mixed esters with fatty acids **142-62-1D**, n-Hexanoic acid, mixed esters with polyols and fatty acids **149-57-5D**, 2-Ethylhexanoic acid, mixed esters with polyols and fatty acids
(**lubricating** oils contg., for refrigerators, with good compatibility to fluorocarbon refrigerants)

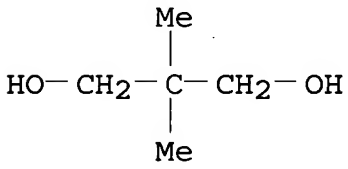
RN 57-11-4 HCA
CN Octadecanoic acid (9CI) (CA INDEX NAME)

$HO_2C-(CH_2)_{16}-Me$

RN 124-04-9 HCA
CN Hexanedioic acid (9CI) (CA INDEX NAME)

$HO_2C-(CH_2)_4-CO_2H$

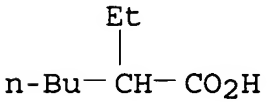
RN 126-30-7 HCA
CN 1,3-Propanediol, 2,2-dimethyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 142-62-1 HCA
CN Hexanoic acid (8CI, 9CI) (CA INDEX NAME)

$Me-(CH_2)_4-CO_2H$

RN 149-57-5 HCA
CN Hexanoic acid, 2-ethyl- (8CI, 9CI) (CA INDEX NAME)



IC ICM C10M105-00
ICA C09K005-04
ICI C10M105-00, C10M105-38, C10M105-06, C10M105-42; C10N040-30
CC 51-8 (Fossil Fuels, Derivatives, and Related Products)
ST **lubricating** oil refrigerator ester; alkylbenzene **lubricating** oil refrigerator; refrigerant compatibility **lubricating** oil
IT **Lubricating** oils
(base oils, alkylbenzenes and esters, for refrigerators, with good compatibility with fluorocarbon refrigerants)
IT **57-11-4D**, Stearic acid, mixed esters with polyols and fatty acids 77-99-6D, Trimethylolpropane, mixed esters with fatty acids

109-52-4D, n-Pentanoic acid, mixed esters with polyols and fatty acids 111-20-6D, Sebacic acid, mixed esters with polyols and fatty acids 115-77-5D, mixed esters with fatty acids **124-04-9D**, Adipic acid, mixed esters with polyols and fatty acids **126-30-7D**, Neopentyl glycol, mixed esters with fatty acids **142-62-1D**, n-Hexanoic acid, mixed esters with polyols and fatty acids **149-57-5D**, 2-Ethylhexanoic acid, mixed esters with polyols and fatty acids 7299-99-2, Pentaerythritol 2-ethylhexanoate 28510-23-8
(**lubricating** oils contg., for refrigerators, with good compatibility to fluorocarbon refrigerants)

IT 75-37-6, 1,1-Difluoroethane 146732-62-9 146732-63-0
(refrigerants, **lubricating** oils with compatibility to, alkylbenzene-fatty ester mixts. as)

L54 ANSWER 18 OF 26 HCA COPYRIGHT 2005 ACS on STN

117:216062 Neopentyl complex esters as **lubricating** oils. Tsuruoka, Kuniaki; Kobashi, Hitoshi (Nippon Oil and Fats Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 04164993 A2 **19920610** Heisei, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1990-288449 19901029.

AB The esters having mol. wt. 270-5000 and the general formula R(R1)C(R2)CO(O)H (R = C1- 6 alkyl, R1 and R2 = C1-2 alkyl groups with total C in R, R1 and R2 being <8) are obtained from a neopentyl polyol and a mixt. of C4-8 acid 3-40 and tertiary fatty acid 60-96 mol%. The resulting esters as **lubricating** oils have improved oxidn. stability, low-temp. flowability and viscosity.

IT **124-04-9D**, Adipic acid, reaction products with neopentyl polyols **126-30-7D**, Neopentyl glycol, reaction products with dibasic acids and tertiary acids **595-37-9D**, 2,2-Dimethyl butanoic acid, reaction products with neopentyl polyols **1185-39-3D**, 2,2-Dimethyl pentanoic acid, reaction products with neopentyl polyols **14250-73-8D**, 2,2-Dimethyl heptanoic acid, reaction products with neopentyl polyols **19889-37-3D**, 2-Methyl-2-ethyl butanoic acid, reaction products with neopentyl polyols **29662-90-6D**, 2,2-Dimethyl octanoic acid, reaction products with neopentyl polyols
(as **lubricating** oils)

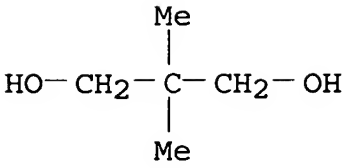
RN 124-04-9 HCA

CN Hexanedioic acid (9CI) (CA INDEX NAME)

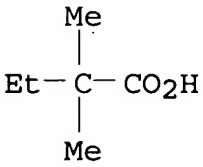
$HO_2C-(CH_2)_4-CO_2H$

RN 126-30-7 HCA

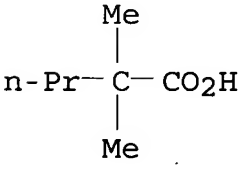
CN 1,3-Propanediol, 2,2-dimethyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



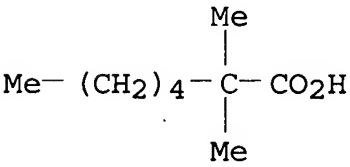
RN 595-37-9 HCA
CN Butanoic acid, 2,2-dimethyl- (9CI) (CA INDEX NAME)



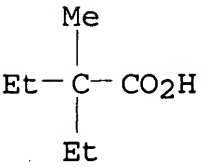
RN 1185-39-3 HCA
CN Pentanoic acid, 2,2-dimethyl- (9CI) (CA INDEX NAME)



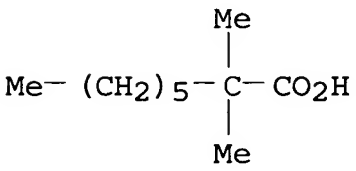
RN 14250-73-8 HCA
CN Heptanoic acid, 2,2-dimethyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 19889-37-3 HCA
CN Butanoic acid, 2-ethyl-2-methyl- (9CI) (CA INDEX NAME)



RN 29662-90-6 HCA
CN Octanoic acid, 2,2-dimethyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



IC ICM C10M105-42
ICS C07C069-02; C10M105-44
ICA C09K005-00
ICI C10N020-00, C10N020-02, C10N040-06, C10N040-08, C10N040-13, C10N040-16, C10N040-25, C10N040-30, C10N050-10
CC 51-8 (Fossil Fuels, Derivatives, and Related Products)
ST **lubricating** oil neopentyl complex ester
IT Esters, compounds
(neopentyl complex, as **lubricating** oils)
IT **Lubricating** oils
(synthetic, neopentyl complex esters as)
IT 75-98-9D, 2,2,-Dimethyl propanoic acid, reaction products with neopentyl polyols 77-99-6D, Trimethylol propane, reaction products with dibasic acids and tertiary acids 110-94-1D, Glutaric acid, reaction products with neopentyl polyols 115-77-5D, Pentaerythritol, reaction products with dibasic acids and tertiary acids **124-04-9D**, Adipic acid, reaction products with neopentyl polyols **126-30-7D**, Neopentyl glycol, reaction products with dibasic acids and tertiary acids 126-58-9D, Dipentaerythritol, reaction products with dibasic acids and tertiary acids 505-48-6D, Suberic acid, reaction products with neopentyl polyols **595-37-9D**, 2,2-Dimethyl butanoic acid, reaction products with neopentyl polyols **1185-39-3D**, 2,2-Dimethyl pentanoic acid, reaction products with neopentyl polyols **14250-73-8D**, 2,2-Dimethyl heptanoic acid, reaction products with neopentyl polyols **19889-37-3D**, 2-Methyl-2-ethyl butanoic acid, reaction products with neopentyl polyols **29662-90-6D**, 2,2-Dimethyl octanoic acid, reaction products with neopentyl polyols
(as **lubricating** oils)

L54 ANSWER 19 OF 26 HCA COPYRIGHT 2005 ACS on STN
115:259786 The use of ester oils as **lubricants** in refrigeration compressors. Cornils, Boy; Weber, Juergen; Lappe, Peter; Springer, Helmut; Preisegger, Ewald; Henrici, Rainer (Hoechst A.-G., Germany). Eur. Pat. Appl. EP 445610 A1 **19910911**, 7 pp. DESIGNATED STATES: R: AT, BE, DE, ES, FR, GB, IT, NL, SE. (German). CODEN: EPXXDW. APPLICATION: EP 1991-102680 19910223.

PRIORITY: DE 1990-4006828 19900305.

AB Esters of dicarboxylic acids and glycols, or polyglycols, and monocarboxylic acids or monohydric alcs. are used as **lubricant** in refrigeration compressors operating with Cl-free, partially fluorinated hydrocarbon refrigerants. These esters are prepd. in 2 stages. A mixt. of diethylene glycol 212, adipic acid 146 in cyclohexane 100 and p-toluenesulfonic acid 1.9 g was heated at 135.degree. for 2 h, and the resulting water was removed as azeotrope. The reaction products was provided with 2-ethylhexanoic acid 317 and p-toluenesulfonic acid 0.9 g and heated at 135.degree. for 7.5 h. The resulting water was removed as azeotrope. The org. phase was treated with 5 wt.% NaOH to pH 10-11, and, after phase sepn. and washing with water, dried at 135.degree. and 20-30 mbar for 4 h. In tests, the ester was thermally stable and was miscible with refrigerants at -20.degree., and had viscosity 36.5 mm2/s.

IT **57-10-3D**, Hexadecanoic acid, esters **57-11-4D**, Octadecanoic acid, esters **88-09-5D**, 2-Ethylbutyric acid, esters **97-61-0D**, 2-Methylvaleric acid, esters **107-88-0D**, 1,3-Butanediol, esters **110-63-4**, 1,4-Butanediol, uses and miscellaneous **111-14-8D**, Heptanoic acid, esters **124-04-9D**, Hexanedioic acid, esters **126-30-7D**, Neopentyl glycol, esters **149-57-5D**, 2-Ethylhexanoic acid, esters
(**lubricants**, for refrigeration compressors operating with chlorine-free fluorocarbons)

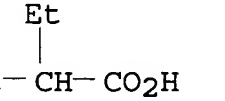
RN 57-10-3 HCA
CN Hexadecanoic acid (9CI) (CA INDEX NAME)

$HO_2C-(CH_2)_{14}-Me$

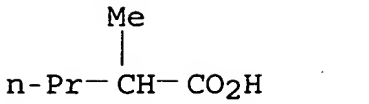
RN 57-11-4 HCA
CN Octadecanoic acid (9CI) (CA INDEX NAME)

$HO_2C-(CH_2)_{16}-Me$

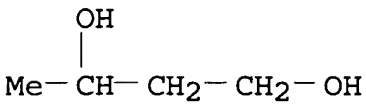
RN 88-09-5 HCA
CN Butanoic acid, 2-ethyl- (9CI) (CA INDEX NAME)



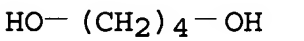
RN 97-61-0 HCA
CN Pentanoic acid, 2-methyl- (9CI) (CA INDEX NAME)



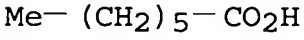
RN 107-88-0 HCA
CN 1,3-Butanediol (8CI, 9CI) (CA INDEX NAME)



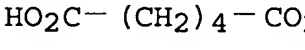
RN 110-63-4 HCA
CN 1,4-Butanediol (8CI, 9CI) (CA INDEX NAME)



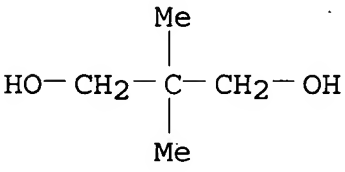
RN 111-14-8 HCA
CN Heptanoic acid (8CI, 9CI) (CA INDEX NAME)



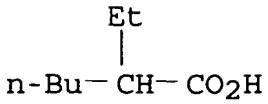
RN 124-04-9 HCA
CN Hexanedioic acid (9CI) (CA INDEX NAME)



RN 126-30-7 HCA
CN 1,3-Propanediol, 2,2-dimethyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 149-57-5 HCA
CN Hexanoic acid, 2-ethyl- (8CI, 9CI) (CA INDEX NAME)



IC ICM C10M105-00
ICS C10M105-42; C09K005-04
ICI C10M105-00, C10M105-42, C10M105-52; C10N040-30
CC 51-8 (Fossil Fuels, Derivatives, and Related Products)
ST ester **lubricant** refrigeration compressor; fluorocarbon refrigerant ester oil **lubricant**
IT Alcohols, esters
(C8-13, esters, **lubricants**, for refrigeration compressors operating with chlorine-free fluorocarbons)
IT **Lubricants**
(esters, for refrigeration compressors operating with chlorine-free fluorocarbon refrigerants)
IT Refrigeration
(agents, fluorocarbons, chlorine-free, synthetic ester **lubricants** for)
IT Refrigerating apparatus
(compressors, **lubricants** for, synthetic esters as, for operation with chlorine-free fluorocarbons)
IT Carboxylic acids, esters
(di-, C4-12, esters, **lubricants**, for refrigeration compressors operating with chlorine-free fluorocarbons)
IT Hydrocarbons, uses and miscellaneous
(fluoro, chlorine-free, refrigerants, refrigeration compressors operating with, synthetic ester **lubricants** for)
IT **57-10-3D**, Hexadecanoic acid, esters **57-11-4D**, Octadecanoic acid, esters 57-55-6D, 1,2-Propanediol, esters 75-98-9D, Pivalic acid, esters **88-09-5D**, 2-Ethylbutyric acid, esters **97-61-0D**, 2-Methylvaleric acid, esters 107-21-1D, 1,2-Ethanediol, esters **107-88-0D**, 1,3-Butanediol, esters 107-92-6D, Butanoic acid, esters 109-52-4D, Valeric acid, esters **110-63-4**, 1,4-Butanediol, uses and miscellaneous **111-14-8D**, Heptanoic acid, esters 111-16-0D, Pimelic acid, esters 111-20-6D, Decanedioic acid, esters 111-46-6D, Diethylene glycol, esters 112-27-6D, Triethylene glycol, esters 116-53-0D, 2-Methylbutyric acid, esters 123-99-9D, Nonanedioic acid, esters **124-04-9D**, Hexanedioic acid, esters **126-30-7D**, Neopentyl glycol, esters **149-57-5D**, 2-Ethylhexanoic acid, esters 503-74-2D, 3-Methylbutyric acid, esters 504-63-2D, 1,3-Propanediol, esters 629-11-8D, 1,6-Hexanediol, esters 693-23-2D, Dodecanedioic acid, esters 24800-44-0D, Tripropylene glycol, esters 25103-52-0D, Isooctanoic acid, esters 25265-71-8D, Dipropylene glycol, esters

25322-68-3D, esters 25322-69-4D, Polypropylene glycol, esters 25448-24-2D, Isotridecanoic acid, esters 26403-17-8D, Isodecanoic acid, esters 26896-18-4D, Isononanoic acid, esters 137608-61-8
(**lubricants**, for refrigeration compressors operating with chlorine-free fluorocarbons)

L54 ANSWER 20 OF 26 HCA COPYRIGHT 2005 ACS on STN
115:139490 **Lubricants** for railheads and car wheel flange.
Sato, Akihito; Tanigawa, Keiichi; Iida, Hiroshi; Sugino, Kazuo (Nippon Steel Corp., Japan). Jpn. Kokai Tokkyo Koho JP 03097789 A2 **19910423** Heisei, 8 pp. (Japanese). CODEN: JKXXAF.
APPLICATION: JP 1989-232950 19890911.

AB The title **lubricants** comprise (a) .gtoreq.1 ester compd. of polyols or polyether polyols with (un)satd. C6-30 carboxylic acid, (un)satd. C2-36 carboxylic diacid, and/or thiocarboxylic diacid, and (b) 0.1-30 wt.% of inorg. or org. compd. such as mica, graphite, Cu powder, PTFE, and K titanate. Thus, a synthetic ester (obtained by reacting 2:2:1 mol. ratio of ethylene glycol/tall-oil fatty acid/succinic acid mixt.) was blended with 5 wt.% MoS2 and 5 wt.% K titanate to obtain a durable **lubricant** for high-speed rail heads.

IT **57-10-3D**, Palmitic acid, esters with polyols and/or polyether polyols **110-63-4D**, 1,4-Butylene glycol, esters with (un)satd. carboxylic acids and/or thiocarboxylic diacids **124-04-9D**, Adipic acid, esters with tall-oil fatty acid and polyols and/or polyether polyols **126-30-7D**, Neopentyl glycol, esters with (un)satd. carboxylic acids and/or thiocarboxylic diacids **1002-96-6D**, Cetoleic acid, esters with tall-oil fatty acid and polyols and/or polyether polyols
(**lubricants**, contg. mica or molybdenum disulfide powder, for railheads and car wheel flanges)

RN 57-10-3 HCA
CN Hexadecanoic acid (9CI) (CA INDEX NAME)

$HO_2C-(CH_2)_{14}-Me$

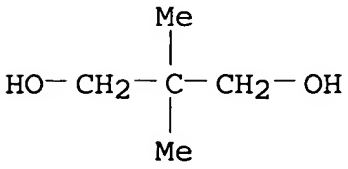
RN 110-63-4 HCA
CN 1,4-Butanediol (8CI, 9CI) (CA INDEX NAME)

$HO-(CH_2)_4-OH$

RN 124-04-9 HCA
CN Hexanedioic acid (9CI) (CA INDEX NAME)

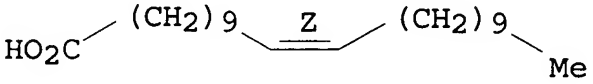
$HO_2C-(CH_2)_4-CO_2H$

RN 126-30-7 HCA
CN 1,3-Propanediol, 2,2-dimethyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 1002-96-6 HCA
CN 11-Docosenoic acid, (11Z)- (9CI) (CA INDEX NAME)

Double bond geometry as shown.



IC ICM C10M169-04
ICS B61K003-00; F16N015-00
ICI C10M169-04, C10M105-42, C10M147-02, C10M125-04, C10M125-22, C10M125-02, C10M125-10, C10M125-26; C10N010-02, C10N010-08, C10N010-12, C10N030-06, C10N040-00
CC 51-8 (Fossil Fuels, Derivatives, and Related Products)
ST **lubricant** railhead car wheel flange; tall oil fatty ester **lubricant**; polyether polyol fatty ester **lubricant**; mica graphite polyol ester **lubricant**
IT Wheels
(flange, of railway car, **lubricants** for)
IT Mica-group minerals, uses and miscellaneous
(powder, **lubricants** contg. synthetic ester and, for railheads and car wheel flanges)
IT Railways
(railheads, high-speed, **lubricants** for)
IT **Lubricants**
(tall-oil fatty acid ester-molybdenum disulfide-potassium titanate blends as, for railheads and car wheel flange)
IT Carboxylic acids, esters
(tall-oil, esters, with polyols or polyether polyols, **lubricants** contg., for railheads and car wheel flanges)
IT 56-81-5, Glycerine, uses and miscellaneous 126-58-9D, Dipentaerythritol, esters with (un)satd. carboxylic acids and/or thiocarboxylic diacids 30399-84-9D, Isostearic acid, esters with polyols and/or polyether polyols
(**lubricant**, contg. mica or molybdenum disulfide powder,

for railheads and car wheel flanges)

IT 50-70-4D, Sorbitol, esters with (un)satd. carboxylic acids and/or thiocarboxylic diacids **57-10-3D**, Palmitic acid, esters with polyols and/or polyether polyols 57-55-6D, Propylene glycol, esters with (un)satd. carboxylic acids and/or thiocarboxylic diacids 77-99-6D, Trimethylolpropane, esters with (un)satd. carboxylic acids and/or thiocarboxylic diacids 87-69-4D, Tartaric acid, esters with tall-oil fatty acid and polyols and/or polyether polyols 88-99-3D, Phthalic acid, esters with tall-oil fatty acid and polyols and/or polyether polyols 107-21-1D, Ethylene glycol, esters with (un)satd. carboxylic acids and/or thiocarboxylic diacids 110-15-6D, Succinic acid, esters with tall-oil fatty acid and polyols and/or polyether polyols **110-63-4D**, 1,4-Butylene glycol, esters with (un)satd. carboxylic acids and/or thiocarboxylic diacids 111-17-1D, Thiodipropionic acid, esters with tall-oil fatty acid and polyols and/or polyether polyols 111-46-6D, Diethylene glycol, esters with (un)satd. carboxylic acids and/or thiocarboxylic diacids 115-77-5D, Pentaerythritol, esters with (un)satd. carboxylic acids and/or thiocarboxylic diacids 123-93-3D, Thiodiglycolic acid, esters with tall-oil fatty acid and polyols and/or polyether polyols 123-99-9D, Azelaic acid, esters with tall-oil fatty acid and polyols and/or polyether polyols **124-04-9D**, Adipic acid, esters with tall-oil fatty acid and polyols and/or polyether polyols **126-30-7D**, Neopentyl glycol, esters with (un)satd. carboxylic acids and/or thiocarboxylic diacids 693-23-2D, 1,12-Dodecanedioic acid, esters with tall-oil fatty acid and polyols and/or polyether polyols **1002-96-6D**, Cetoleic acid, esters with tall-oil fatty acid and polyols and/or polyether polyols 6915-15-7D, Malic acid, esters with tall-oil fatty acid and polyols and/or polyether polyols 25103-52-0D, Isooctanoic acid, esters with polyols and/or polyether polyols 25265-71-8D, Dipropylene glycol, esters with (un)satd. carboxylic acids and/or thiocarboxylic diacids 25791-96-2D, esters with (un)satd. carboxylic acids and/or thiocarboxylic diacids 29860-47-7D, esters with (un)satd. carboxylic acids and/or thiocarboxylic diacids 31694-55-0D, esters with (un)satd. carboxylic acids and/or thiocarboxylic diacids 59113-36-9D, esters with (un)satd. carboxylic acids and/or thiocarboxylic diacids
(**lubricants**, contg. mica or molybdenum disulfide powder, for railheads and car wheel flanges)

IT 1317-33-5, Molybdenum disulfide, uses and miscellaneous 7440-50-8, Copper, uses and miscellaneous 7782-42-5, Graphite, uses and miscellaneous 9002-84-0, Polytetrafluoroethylene 12030-97-6, Potassium titanate (K2TiO3)
(powder, **lubricants** contg. synthetic ester and, for railheads and car wheel flanges)

L54 ANSWER 21 OF 26 HCA COPYRIGHT 2005 ACS on STN

113:174164 Epoxy resin primer compositions for metals. Sakaguchi, Yujiro; Asajima, Hiroshi; Nakamichi, Toshihiko (Nippon Oils & Fats Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 02150476 A2 **19900608** Heisei, 7 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1988-304040 19881202.

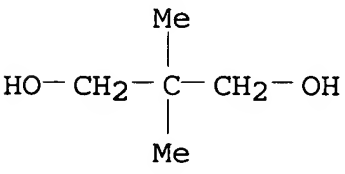
AB Title compns., curable at low temp. to form **anticorrosive** solvent-resistant films on Al and Fe with good adhesion, comprise 30-80% bisphenol A-based epoxy resins with epoxy equiv. 1650-3500 and/or their reaction products with monocarboxylic acids, 10-70% epoxy-modified polyesters contg. 30-60% bisphenol A-based epoxy resins with epoxy equiv. 175-700 and showing OH value 30-200 and acid value 5-40, and 5-45% aminoplasts. A compn. contg. 24 parts Araldite GT6097, 18 parts reaction product of lauric acid, adipic acid, Epikote 828 (I), neopentyl glycol, and trimethylolpropane with acid value 10, OH value 140, and I content 60%, 30 parts U-Van 20SE-60, TiO2, BaSO4, carbon black, phthalocyanine blue, xylene, Cellosolve acetate, and toluene was coated on Al and cured at 140.degree. to form a film which showed no delamination when rubbed with a gauze at 120.degree., did not discolor xylene-soaked gauze during rubbing, and formed no blisters when topcoated, cross-cut, and sprayed with salt soln.

IT **124-04-9D**, Hexanedioic acid, reaction products with epoxy resins and polyols **126-30-7D**, reaction products with epoxy resins and carboxylic acids **143-07-7D**, Dodecanoic acid, reaction products with epoxy resins and polyols
(primers contg., low-temp.-curable, **anticorrosive**)

RN 124-04-9 HCA
CN Hexanedioic acid (9CI) (CA INDEX NAME)

$HO_2C-(CH_2)_4-CO_2H$

RN 126-30-7 HCA
CN 1,3-Propanediol, 2,2-dimethyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 143-07-7 HCA
CN Dodecanoic acid (9CI) (CA INDEX NAME)

$HO_2C-(CH_2)_{10}-Me$

IC ICM C09D163-00
ICS C09D163-00
CC 42-9 (Coatings, Inks, and Related Products)
Section cross-reference(s): 35
IT 65-85-0D, Benzoic acid, reaction products with epoxy resins and polyols 77-99-6D, reaction products with epoxy resins and carboxylic acids 98-73-7D, reaction products with epoxy resins and polyols **124-04-9D**, Hexanedioic acid, reaction products with epoxy resins and polyols **126-30-7D**, reaction products with epoxy resins and carboxylic acids **143-07-7D**, Dodecanoic acid, reaction products with epoxy resins and polyols 629-11-8D, 1,6-Hexanediol, reaction products with epoxy resins and carboxylic acids 25068-38-6D, reaction products with carboxylic acids and polyols
(primers contg., low-temp.-curable, **anticorrosive**)

L54 ANSWER 22 OF 26 HCA COPYRIGHT 2005 ACS on STN
111:118044 **Metalworking lubricating** oils. Tanigawa, Keiichi; Higaki, Juzo (Nippon Steel Corp., Japan; Nisshin Oil Mills Ltd.). Jpn. Kokai Tokkyo Koho JP 01139694 A2 **19890601** Heisei, 9 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1987-296169 19871126.
AB Title oils contain esters of 2-6 valent polyols, fatty acids, and dibasic acids. The oils are useful for cold-rolling of steel plates, cutting, grinding, and plastic **working** of **metals.** Thus, glycerin 184, thiodipropionic acid 178, and isostearic acid 994 g were stirred in the presence of p-MeC6H4SO3H at 160-230.degree. for 9 h to give 1130 g ester with acid value 2.1 and sapon. value 241. A **lubricating** oil contg. the ester 30, **machine oil** 65, and stearic acid 5% showed friction coeff. 0.045, baking resistance 85, and heat resistance 435.degree., vs., 0.120, 4, and 355, resp., for **machine oil.**
IT **57-10-3D**, Palmitic acid, esters with polyol and dibasic acid **110-63-4D**, 1,4-Butanediol, esters with fatty acid and dibasic acid **124-04-9D**, Hexanedioic acid, esters with polyol and fatty acid **126-30-7D**, esters with fatty acid and dibasic acid
(**lubricating** oils, for **metalworking**)
RN 57-10-3 HCA
CN Hexadecanoic acid (9CI) (CA INDEX NAME)

$HO_2C-(CH_2)_{14}-Me$

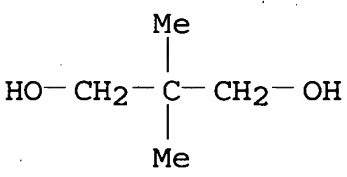
RN 110-63-4 HCA
CN 1,4-Butanediol (8CI, 9CI) (CA INDEX NAME)

HO— $(CH_2)_4$ —OH

RN 124-04-9 HCA
CN Hexanedioic acid (9CI) (CA INDEX NAME)

HO_2C— $(CH_2)_4$ — CO_2H

RN 126-30-7 HCA
CN 1,3-Propanediol, 2,2-dimethyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



IC ICM C10M105-42
ICS B21B045-02; C10M129-78
ICA D06M013-16
ICI C10N030-00, C10N040-22, C10N040-24
CC 51-8 (Fossil Fuels, Derivatives, and Related Products)
Section cross-reference(s): 55, 56
ST polyol ester **lubricating** oil **metalworking**; fatty acid polyol ester oil
IT **Lubricating** oils
(plastic-working, contg. esters of polyols and dibasic acids and fatty acids, for metals)
IT Fatty acids, esters
(coco, esters, with polyol and dibasic acid, **lubricating** oils, for **metalworking**)
IT **Lubricating** oils
(cold-rolling, emulsions, contg. esters of polyols and dibasic acids and fatty acids)
IT **Lubricating oils**
(**cutting oils**, contg. esters of polyols and dibasic acids and fatty acids, for metals)
IT Carboxylic acids, esters
(di-, with polyols and fatty acids, **lubricating** oils, for **metalworking**)
IT Fatty acids, esters
(esters, with polyols and dibasic acids, **lubricating** oils, for **metalworking**)
IT Fatty acids, esters
(fish-oil, hydrogenated, esters, with polyol and dibasic acid, **lubricating** oils, for **metalworking**)

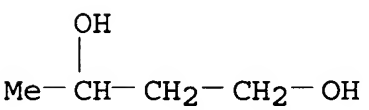
IT **Lubricating** oils
(**metalworking**, contg. esters of polyols and dibasic acids and fatty acids)
IT Fatty acids, esters
(rape-oil, esters, with polyol and dibasic acid, **lubricating** oils, for **metalworking**)
IT Fatty acids, esters
(soya, esters, with polyol and dibasic acid, **lubricating** oils, for **metalworking**)
IT Fatty acids, esters
(tall-oil, esters, with polyol and dibasic acid, **lubricating** oils, for **metalworking**)
IT Fatty acids, esters
(tallow, esters, with polyol and dibasic acid, **lubricating** oils, for **metalworking**)
IT Fatty acids, polymers
(unsatd., dimers, esters, **lubricating** oils, for **metalworking**)
IT 50-70-4D, Sorbitol, esters with fatty acid and dibasic acid 56-81-5D, 1,2,3-Propanetriol, esters with fatty acid and dibasic acid **57-10-3D**, Palmitic acid, esters with polyol and dibasic acid 57-55-6D, 1,2-Propanediol, esters with fatty acid and dibasic acid 68-11-1D, Thioglycolic acid, esters with polyol and fatty acid 77-99-6D, esters with fatty acid and dibasic acid 87-69-4D, esters with polyol and fatty acid 88-99-3D, 1,2-Benzenedicarboxylic acid, esters with polyol and fatty acid 107-21-1D, Ethylene glycol, esters with fatty acid and dibasic acid 110-15-6D, Succinic acid, esters with polyol and fatty acid **110-63-4D**, 1,4-Butanediol, esters with fatty acid and dibasic acid 111-17-1D, Thiodipropionic acid, esters with polyol and fatty acid 111-20-6D, Decanedioic acid, esters with polyol and fatty acid 111-46-6D, esters with fatty acid and dibasic acid 115-77-5D, esters with fatty acid and dibasic acid 123-99-9D, Azelaic acid, esters with polyol and fatty acid **124-04-9D**, Hexanedioic acid, esters with polyol and fatty acid **126-30-7D**, esters with fatty acid and dibasic acid 126-58-9D, Dipentaerythritol, esters with fatty acid and dibasic acid 821-38-5D, Tetradecanedioic acid, esters with polyol and fatty acid 1119-62-6D, esters with polyol and fatty acid 6915-15-7D, esters with polyol and fatty acid 25103-52-0D, Isooctanoic acid, esters with polyol and dibasic acid 25265-71-8D, Dipropylene glycol, esters with fatty acid and dibasic acid 25791-96-2D, esters with fatty acid and dibasic acid 30399-84-9D, Emersol 871, esters with polyol and dibasic acid 31694-55-0D, esters with fatty acid and dibasic acid 50586-59-9D, esters with fatty acid and dibasic acid 59113-36-9D, Diglycerin, esters with fatty acid and dibasic acid
(**lubricating** oils, for **metalworking**)

L54 ANSWER 23 OF 26 HCA COPYRIGHT 2005 ACS on STN
90:124423 Fire-resistant hydraulic liquid. Ohba, Kenjiro; Izumi, Kaichi; Yasuda, Shinichiro (Kao Soap Co., Ltd., Japan). Ger. Offen. DE 2807078 **19780831**, 29 pp. (German). CODEN: GWXXBX. APPLICATION: DE 1978-2807078 19780218.

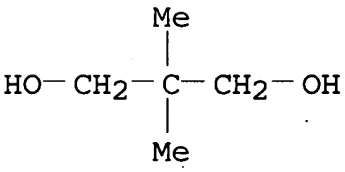
AB The formulation of fire-retardant **hydraulic fluids** from mixts. of phosphate triesters and aliph. polyestes of dibasic acids and glycols is described. The triesters were derived from H3PO4 and alcs. or alc. mixts., including alkanols, phenols, and alkylphenols. The polyesters (mol. wts. 5000-50,000) were obtained from C3-24 dibasic alkanoic acids and 2-10 glycols.

IT **107-88-0 126-30-7**
(esterification of, with mono- and dibasic acids)

RN 107-88-0 HCA
CN 1,3-Butanediol (8CI, 9CI) (CA INDEX NAME)

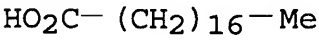


RN 126-30-7 HCA
CN 1,3-Propanediol, 2,2-dimethyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

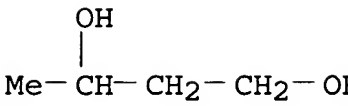


IT **57-11-4D**, mixed esters with neopentyl glycol and sebasic acid **107-88-0D**, mixed esters with aliph. monobasic and dibasic acids **124-04-9D**, mixed esters with alkane diols **126-30-7D**, mixed esters with aliph. monobasic and dibasic acids **143-07-7D**, mixed esters with adipic and 1,3-butanediol
(fire-resistant **hydraulic fluids** contg., manuf. and properties of)

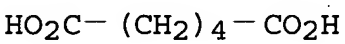
RN 57-11-4 HCA
CN Octadecanoic acid (9CI) (CA INDEX NAME)



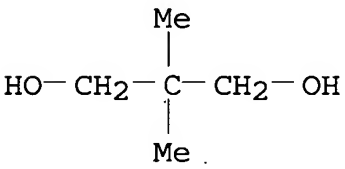
RN 107-88-0 HCA
CN 1,3-Butanediol (8CI, 9CI) (CA INDEX NAME)



RN 124-04-9 HCA
CN Hexanedioic acid (9CI) (CA INDEX NAME)



RN 126-30-7 HCA
CN 1,3-Propanediol, 2,2-dimethyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 143-07-7 HCA
CN Dodecanoic acid (9CI) (CA INDEX NAME)

IC C10M003-40
CC 51-8 (Fossil Fuels, Derivatives, and Related Products)
Section cross-reference(s): 23, 37
ST fire resistant **hydraulic fluid** polyester;
phosphate ester fire retardation; glycol ester fire resistance;
phenol phosphate **hydraulic fluid**; alkanoate
glycol fire retardant
IT Polyesters, uses and miscellaneous
(fire-resistant **hydraulic fluids** contg.,
manuf. and properties of)
IT **Hydraulic fluids**
(fire-resistant, phosphate esters contg. polyesters, manuf. and
properties of)
IT **107-88-0 126-30-7**
(esterification of, with mono- and dibasic acids)
IT **57-11-4D**, mixed esters with neopentyl glycol and sebasic
acid 57-55-6D, mixed esters with alkane dioic and higher alcs.
107-88-0D, mixed esters with aliph. monobasic and dibasic
acids 111-20-6D, mixed esters with alkane diols **124-04-9D**
, mixed esters with alkane diols **126-30-7D**, mixed esters

with aliph. monobasic and dibasic acids **143-07-7D**, mixed esters with adipic and 1,3-butanediol
(fire-resistant **hydraulic fluids** contg., manuf. and properties of)
IT 1330-78-5P 25155-23-1P 26444-49-5P 26967-76-0P
(**hydraulic fluids** contg. polyesters and, manuf. and properties of)

L54 ANSWER 24 OF 26 HCA COPYRIGHT 2005 ACS on STN
69:79065 Complex ester **lubricants.** Fowler, Benjamin T.; Scott, Michael D.; Lewis, Eric J. (Esso Research and Engineering Co.). Brit. GB 1122466 **19680807**, 6 pp. (English). CODEN: BRXXAA. APPLICATION: GB 19660112.
AB Complex esters with improved load-carrying properties and high-temp. oxidn. resistance are prepd. by carrying out the esterification reaction in the presence of 0.5-2% phosphate ester. Thus, a mixt. of 1 mole adipic acid, 2 moles neopentyl glycol, and 4 g. Bu3PO4 is heated under N (115-50.degree.) until 98-100% of the theoretical amt. of H2O is given off (.apprx.4 hrs.), cooled to 125-30.degree., 2.2 moles pelargonic acid added, the reaction continued to completion (4-5 hrs., 200-220.degree.), and the mixt. stripped with a N bleed to give an ester of 232.degree. flash point. The ester is washed with a mixt. of Na2CO3, iso-PrOH, heptane, and H2O; the washed ester is (total acid no. <0.10 mg. KOH/g.) stripped under N under conditions of temp. and pressure to give a product having a flash point of 232.degree.. The ester is stirred with 2% alumina fines and 2% animal charcoal 1-1.5 hrs. at 110-15.degree., and filtered. The compds. are used as aviation **lubricants.**
IT **124-04-9D**, Adipic acid, esters with neopentyl glycol and pelargonic acid
(as **lubricant**)
RN 124-04-9 HCA
CN Hexanedioic acid (9CI) (CA INDEX NAME)

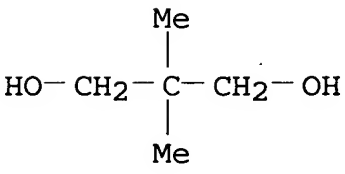
$HO_2C-(CH_2)_4-CO_2H$

IT **112-05-0D**, Nonanoic acid, esters with neopentyl glycol and adipic acid **126-30-7D**, 1,3-Propanediol, 2,2-dimethyl-, esters with adipic and pelargonic acids
(as **lubricant** for extreme-pressure and high-temp.)
RN 112-05-0 HCA
CN Nonanoic acid (7CI, 8CI, 9CI) (CA INDEX NAME)

$HO_2C-(CH_2)_7-Me$

RN 126-30-7 HCA

CN 1,3-Propanediol, 2,2-dimethyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



IC C07C
CC 51 (Petroleum, Petroleum Derivatives, and Related Products)
ST aviation **lubricants** adipates; **lubricants** aviation adipates; adipates aviation **lubricants**; pelargonates aviation **lubricants**; neopentyl glycol aviation **lubricants**
IT **124-04-9D**, Adipic acid, esters with neopentyl glycol and pelargonic acid
(as **lubricant**)
IT **112-05-0D**, Nonanoic acid, esters with neopentyl glycol and adipic acid **126-30-7D**, 1,3-Propanediol, 2,2-dimethyl-, esters with adipic and pelargonic acids
(as **lubricant** for extreme-pressure and high-temp.)

L54 ANSWER 25 OF 26 HCA COPYRIGHT 2005 ACS on STN
48:64095 Original Reference No. 48:11318a-i,11319a-c Aliphatic esters. Properties and **lubricant** applications. Cohen, George; Murphy, C. M.; O'Rear, J. G.; Ravner, Harold; Zisman, W. A. (Naval Research Lab., Washington, DC). Journal of Industrial and Engineering Chemistry (Washington, D. C.), 45, 1766-75 (Unavailable) **1953.** CODEN: JIECAD. ISSN: 0095-9014.
AB cf. C.A. 41, 4297h. This report summarizes studies since 1947 on the effectiveness of **antioxidants** with **lubricant** esters and on phys. properties of esters related to **lubrication** problems. The effect of various concns. of **antioxidants** on bis(2-ethylhexyl) sebacate was tested at temps. from 100.degree. to 175.degree. in an aeration-type oxidn. app. (cf. C.A. 41, 4299e) in terms of induction period, viscosity increase, neutralization no. for volatile and nonvolatile acids, and wt. change. Sludge and lacquer formation and corrosion were also noted. Results are tabulated for: phenothiazine and its 3-F and 3,7-di-F derivs.; Ph2NH; di-2-thenylamine; 4-fluoro- and 4,4'-difluorodiphenylamine; 4,4'-dioctyldiphenylamine; 1-C10H7NHPh; 2,4-Ph(Me3C)C6H3OH; (p-HOC6H4)2CMe2; "lauryl gallate"; 4,2,6-Me(Me3C)2C6H2OH; .alpha.- and .beta.-conidendrin; [5,3,2-Me(Me3C)(HO)C6H2]2CH2; dihexadecyl sulfide, didodecyl, diisoamyl, dioctyl, didecyl, and bis[1-(3-ethylpentyl)-4-ethyloctyl] selenide; tri-Bu and tri-Ph phosphite; 1,3,4-tri-Ph thiophosphate; N,N'-diisobutyl and N,N'-diphenylbenzenethiophosphondiamide; Ph

phenylthiophosphonate; rhodanine and its 5-benzylidene- and 4-dimethylamino-5-benzylidene derivs.; 2-imino-4-oxothiazolidine; 4-(tert-butylphenyl)-2-mercaptothiazole; 1,3,4-thiadiazolyl-2,5-bis(diethyldithiocarbamate) and 2,5-bis(dibutyldithiocarbamate); 2-benzothiazolyl-N,N'diethylthiocarbamoyl sulfide; (Bu2NCS2)2Ni; SnPh4; and a Zn complex of di-Bu dithiocarbamate and Bu2NH. The primary alkyl selenides, 1-C10H7NHPh, the conidendrins, and phenothiazine were found most effective. The results of similar tests are tabulated for phenothiazine with the following esters: bis(3,5,5-trimethylhexyl) and bis(2-ethylhexyl) glutarates; dihexyl trimethyladipate; diamyl adipate; diisooctyl, bis(2-methylpentyl), and bis(2-ethylhexyl) pimelates; bis(2-ethylhexyl) sebacate; tris(2-ethylhexyl), triamyl, and trihexyl aconitate; tri-Am, trihexyl, and monoethyl dioctyl tricarballylates; propylene glycol, dipropylene glycol, and 2-methyl-1,3-pentanediol dinonanoates; trimethylolethane, glycerol, and 1,4,7-heptanetriol trihexanoates; 1,5-pentanediol bis(2-methylpentanoate); and bis(2-ethylbutyl) and bis(2-methylbutyl) thiodipropionates. The **antioxidant** action was effective with all esters except those of aconitic and thiodipropionic acids up to a temp. of 163.degree.C. M.ps. or b.ps., viscosities from 68.degree. to 350.degree.F., and viscosity indexes (Dean-Davis, Hardiman-Nissan, and ASTM chart slope) are listed for: Et and heptyl heptanoates; nonyl, decyl, octadecyl, and melissyl acetates; Am, decyl, and melissyl caproates; Et myristate; Me, Am, decyl, octadecyl, and melissyl laurates; Et, Am, decyl, octadecyl, and melissyl stearates; and Am, decyl, octadecyl, and melissyl melissates. F. ps. or pour points, viscosities from -55.degree. to 210.degree.F., viscosity indexes, and evapn. wt. losses (ASTM Method D 972-51T) are listed for: di-Bu citraconate and pyrotartrate; di-Bu and bis(2-ethylhexyl) 3-methylglutarate; bis(2-methylpentyl) and bis(3,5,5-trimethylhexyl) glutarate; di-Bu 2-ethylglutarate; di-Bu and bis(2-ethylhexyl) 3-methyladipates; bis(2-methylbutyl), bis(3-methylbutyl), di-Am, bis(2-methylpentyl), bis(2-ethylhexyl), bis(3,5,5-trimethylhexyl) adipates; bis(2-ethylbutyl), bis(2-methylpentyl), bis(2-ethylhexyl) pimelates; bis(2-ethylbutyl) and bis(2-ethylhexyl) azelaates; bis(3,5,5-trimethylhexyl), bis(1-methylheptyl), and dioctyl sebacates; di-Bu, bis(2-ethylbutyl), bis(2-methylpentyl), and bis(2-ethylhexyl) thiodipropionates; tri-Bu, tris(3-methylbutyl), tri-Am, trihexyl, and tris(2-ethylhexyl) aconitates; tri-Bu, tris(3-methylbutyl), tri-Am, trihexyl, and mono-Et dioctyl tricarballylate; 1,5-pentanediol bis(2-ethylbutanoate), bis(2-methylpentanoate), and bis(2-Et hexanoate); 3-methyl-1,5-pentanediol. bis(2-methylpentanoate) and dihexanoate; dipropylene glycol dihexanoate and dinonanoate; 2,4-pentanediol dihexanoate; 1,3-propanediol bis(2-ethylhexanoate); 2,5-dimethyl-1,6-hexanediol dihexanoate; 2-methyl-1,3-pentanediol dinonanoate; glycerol, trimethylolethane, trimethylolpropane, and

1,2,6-hexanetriol trihexanoates; 1,4,7-octanetriol tributanoate; pentaerythritol tetrahexanoate; 1,4,7-heptanetriol trihexanoate; 1,4,7-octanetriol trinonanoate; 9-n-hexyl and 9-n-octylheptadecane; 7-n-hexyl and 9-n-octyleicosane. Relationships between mol. structure and these phys. properties are discussed in some detail. The phys. properties of a series of ester blends were also detd. A blend obtained by esterifying a mixt. of n-pentanol 35, 3-methylbutanol 35, and 2-methylbutanol 30% with adipic acid was found to have a lower f.p. and evapn. rate than an equiv. mixt. of the 3 corresponding sym. diesters and about the same viscosity at -65.degree.F. Both mixts. had lower viscosities than the pure iso-Am esters. Of the compds. studied, only bis(3,5-trimethylhexyl) glutarate and trimethylolethane and trimethylolpropane trihexanoates meet the viscometric and low-temp. requirements (MIL-O-6085) of a base stock for instrument oils. Only trimethylolpropane trihexanoate meets the requirements (MIL-L-7808) for gas-turbine **engine oil**, although some others may if small quantities of more viscous esters are added to raise the viscosity at 210.degree.F. Gun oil specification MIL-L-17353 is met by bis(2-methylbutyl) or bis(3-methylbutyl) adipate with an **antioxidant** and Ba petroleumsulfonate rust inhibitor. Bis(2-methylpentyl) glutarate, bis(C5-oxo)pimelate, 1,5-pentanediol bis(2-methylpentanoate), 3-methyl-1,5-pentanediol bis(2-methylpentanoate), and 3-methyl-1,5-pentanediol dihexanoate also show promise for use in gun oils.

IT **506-50-3**, Melissic acid **38232-01-8**, Hentriacontanoic acid
(esters)

RN 506-50-3 HCA

CN Triacontanoic acid (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

$HO_2C-(CH_2)_{28}-Me$

RN 38232-01-8 HCA

CN Hentriacontanoic acid (9CI) (CA INDEX NAME)

$HO_2C-(CH_2)_{29}-Me$

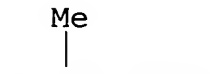
IT **142-62-1**, Hexanoic acid
(esters of, phys. properties of, and their **lubricating** value)

RN 142-62-1 HCA

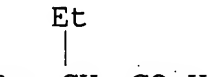
CN Hexanoic acid (8CI, 9CI) (CA INDEX NAME)

$Me-(CH_2)_4-CO_2H$

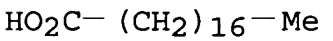
IT **97-61-0**, Valeric acid, 2-methyl- **149-57-5**, Hexanoic acid, 2-ethyl-
(esters, phys. properties and **lubricating** value of)
RN 97-61-0 HCA
CN Pentanoic acid, 2-methyl- (9CI) (CA INDEX NAME)



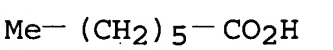
RN 149-57-5 HCA
CN Hexanoic acid, 2-ethyl- (8CI, 9CI) (CA INDEX NAME)



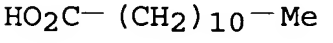
IT **57-11-4**, Stearic acid **111-14-8**, Heptanoic acid **143-07-7**, Lauric acid
(esters, phys. properties of)
RN 57-11-4 HCA
CN Octadecanoic acid (9CI) (CA INDEX NAME)



RN 111-14-8 HCA
CN Heptanoic acid (8CI, 9CI) (CA INDEX NAME)



RN 143-07-7 HCA
CN Dodecanoic acid (9CI) (CA INDEX NAME)



IT **111-29-5**, 1,5-Pentanediol **112-05-0**, Nonanoic acid **124-04-9**, Adipic acid
(esters, phys. properties of, and their **lubricating** value)
RN 111-29-5 HCA
CN 1,5-Pentanediol (8CI, 9CI) (CA INDEX NAME)

HO—$(CH_2)_5$—OH

RN 112-05-0 HCA
CN Nonanoic acid (7CI, 8CI, 9CI) (CA INDEX NAME)

HO_2C—$(CH_2)_7$—Me

RN 124-04-9 HCA
CN Hexanedioic acid (9CI) (CA INDEX NAME)

HO_2C—$(CH_2)_4$—CO_2H

IT **11139-91-6**, Hexanoin
(phys. properties and **lubricating** value of tri-)
RN 11139-91-6 HCA
CN Hexanoic acid, ester with 1,2,3-propanetriol (9CI) (CA INDEX NAME)

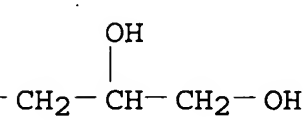
CM 1

CRN 142-62-1
CMF C6 H12 O2

Me—$(CH_2)_4$—CO_2H

CM 2

CRN 56-81-5
CMF C3 H8 O3



CC 10 (Organic Chemistry)
IT Esters
(aliph., and their **lubricating** value)
IT Oxidation
(ester **lubricant** stability to, and its improvement)
IT **Lubricants**
(esters (aliph.) as)
IT Instruments
(**lubricants** for)

IT Guns
(**lubricants** for, esters)
IT Pour point
(measurement of, of aliph. ester **lubricants**)
IT 2-Thiazolethiol, 4-(tert-butylphenyl)-
Isopentyl selenide
Selenide, bis[4-ethyl-1-(3-ethylpentyl)octyl]
Zinc, compd. with dibutylamine
Zinc, compd. with dibutyldithiocarbamic acid
(as **antioxidant** for aliph. ester **lubricants**)
IT Dibutylamine, compds. with dibutyldithiocarbamic acid, Zn complex
(as **antioxidant** for ester **lubricants**)
IT 1,3,4-Thiadiazole-2,5-dithiol, dithiocarbamate
(as **antioxidants** for aliph. ester **lubricants**)
IT 2-Octanol, sebacate
(phys. properties and **lubricating** value of)
IT 3806-42-6, Rhodanine, 5-benzylidene-
(as **antioxidant** for aliph. ester lubri cants)
IT 92-84-2, Phenothiazine 95-30-7, Benzothiazole, 2-mercapto-, diethyldithiocarbamate 101-02-0, Phenyl phosphite, (PhO)3P 101-67-7, Diphenylamine, 4,4'-dioctyl- 102-85-2, Butyl phosphite, (BuO)3P 141-84-4, Rhodanine 330-83-6, Diphenylamine, 4-fluoro- 330-91-6, Diphenylamine, 4,4'-difluoro- 397-59-1, Phenothiazine, 3-fluoro- 398-00-5, Phenothiazine, 3,7-difluoro- 536-17-4, Rhodanine, 5-(p-dimethylaminobenzylidene)- 556-90-1, Pseudothiohydantoin 577-92-4, Phenol, 4-tert-butyl-2-phenyl- 597-82-0, Phenyl phosphorothioate, Ph3PO3S 597-82-0, Phenyl thiophosphates, Ph3PO3S 597-82-0, Phosphorothioic acid, triphenyl ester 1166-52-5, Gallic acid, dodecyl ester 3312-77-4, Hexadecyl sulfide 5819-01-2, Dodecyl selenide 18995-01-2, Phosphonothioic diamide, N,N',P-triphenyl- 52056-03-8, Octyl selenide 58703-21-2, Di-2-thenylamine 81106-38-9, Phosphonothioic diamide, N,N'-diisobutyl-P-phenyl- 88239-51-4, Phosphonothioic acid, phenyl-, diphenyl ester
(as **antioxidant** for aliph. ester **lubricants**)
IT 595-90-4, Tin, tetraphenyl- 52056-05-0, Decyl selenide
(as **antioxidant** for **lubricants**)
IT 80-05-7, Phenol, 4,4'-isopropylidenedi- 90-30-2, 1-Naphthylamine, N-phenyl- 119-47-1, p-Cresol, 2,2'-methylenebis[6-tert-butyl- 122-39-4, Diphenylamine 128-37-0, p-Cresol, 2,6-di-tert-butyl-
(as **antioxidant**, for aliph. ester **lubricants**)
IT 518-55-8, Conidendrin, .alpha.- 518-55-8, Conidendrin, .beta.-
(as **antioxidants** for aliph. ester **lubricants**)
IT 150-11-8, Carbamic acid, dibutyldithio-
(derivs., as **antioxidants** for aliph. ester **lubricants**)
IT 112-92-5, 1-Octadecanol **506-50-3**, Melissic acid **38232-01-8**, Hentriacontanoic acid

(esters)
IT 104-76-7, 1-Hexanol, 2-ethyl- 111-87-5, Octyl alcohol
142-62-1, Hexanoic acid
(esters of, phys. properties of, and their **lubricating** value)
IT 147-84-2, Carbamic acid, diethyldithio-
(esters, as **antioxidants** for aliph. ester **lubricants**)
IT 499-12-7, Aconitic acid
(esters, **lubricant** and phys. properties of)
IT **97-61-0**, Valeric acid, 2-methyl- **149-57-5**, Hexanoic acid, 2-ethyl-
(esters, phys. properties and **lubricating** value of)
IT **57-11-4**, Stearic acid **111-14-8**, Heptanoic acid **143-07-7**, Lauric acid 544-86-5, Myricyl alcohol 544-86-5, 1-Hentriacontanol 5432-79-1, 1,4,7-Octanetriol
(esters, phys. properties of)
IT 57-55-6, 1,2-Propanediol 71-41-0, Amyl alcohol 97-95-0, 1-Butanol, 2-ethyl- 99-14-9, Tricarballylic acid 105-30-6, 1-Pentanol, 2-methyl- 110-94-1, Glutaric acid 111-16-0, Pimelic acid 111-17-1, Propionic acid, 3,3'-thiodi- 111-20-6, Sebacic acid 111-27-3, Hexyl alcohol **111-29-5**, 1,5-Pentanediol **112-05-0**, Nonanoic acid 123-99-9, Azelaic acid **124-04-9**, Adipic acid 137-32-6, 1-Butanol, 2-methyl- 149-31-5, 1,3-Pentanediol, 2-methyl- 626-51-7, Glutaric acid, 3-methyl- 1653-40-3, 1-Heptanol, 6-methyl- 3058-01-3, Hexanedioic acid, 3-methyl- 3452-97-9, 1-Hexanol, 3,5,5-trimethyl- 3586-39-8, Hexanedioic acid, 2,2,4-trimethyl- 3937-59-5, Hexanedioic acid, 2,4,4-trimethyl- 4457-71-0, 1,5-Pentanediol, 3-methyl- 25265-71-8, Dipropylene glycol
(esters, phys. properties of, and their **lubricating** value)
IT 6624-72-2, Butyric acid, 2-ethyl-, pentamethylene ester 18447-89-7, Pyrotartaric acid, dibutyl ester 22644-92-4, Citraconic acid, dibutyl ester 23382-23-2, 1,3-Propanediol, 2-ethyl-2-(hydroxymethyl)-, trihexanoate 24260-85-3, 1,3-Propanediol, bis(2-ethylhexanoate) 500282-61-1, 1,4,7-Heptanetriol, trihexanoate 607363-52-0, 2,4-Pentanediol, dihexanoate 854705-43-4, Glutaric acid, 2-ethyl-, dibutyl ester 855909-42-1, 1,6-Hexanediol, 2,5-dimethyl-, dihexanoate
(phys. properties and **lubricating** value of)
IT **11139-91-6**, Hexanoin
(phys. properties and **lubricating** value of tri-)
IT 74634-68-7, 1,3-Propanediol, 2-(hydroxymethyl)-2-methyl-, trihexanoate
(phys. properties of, and its **lubricating** value)

L54 ANSWER 26 OF 26 HCA COPYRIGHT 2005 ACS on STN

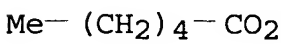
46:9892 Original Reference No. 46:1759i,1760a-d Dibasic acid esters. Smith, Paul V., Jr. (Standard Oil Development Co.). US 2575195 **19511113** (Unavailable). APPLICATION: US .

AB Complex esters (I) having higher viscosity index and lower pour points than mineral oils of corresponding viscosity are disclosed as suitable for **lubricants** for combustion turbine engines, such as the "prop-jet" type. I is prepd. by treating one mol. of a dibasic acid (II) with one mol. of a glycol (III) with 4.5 g. of p-toluenesulfonic acid monohydrate and 100 ml. of toluene. The mixt. was refluxed until exactly one mol. of water was collected. Thereafter one mol. of a monohydric alc. (IV) was added and the reaction continued until no more water was collected. One mol. of monobasic acid (V) was then added and the reaction continued until again no more water collected. The mol. wt. of the entire ester should be at least 300 and the viscosity should not be greater than 150 seconds Saybolt at 210.degree.F. The preferred II are the straight chain acids of the paraffinic group from 6-10 C atoms per mol. IV should be the aliphatic primary alcs. from 6-10 C atoms per mol. The preferred V are the fatty acids contg. 2-10 C atoms per mol. The III used is ethylene glycol and any of the paraffinic homologs having up to 18 C atoms. Eight specific complex esters are disclosed wherein the flash points vary from 355.degree. to 515.degree.F., the viscosity index from 117 to 162, and the ASTM pour point from 50.degree. to greater than -35.degree.F. The components of these esters are as follows: adipic acid, thiodiglycol, caproic acid, and 2-ethylhexanol; adipic acid, triethylene glycol, caproic acid, and 2-ethylhexanol; adipic acid, trimethylene glycol, caproic acid, and 2-ethylhexanol; sebacic acid, tetraethylene glycol, caprylic acid, and C10 "oxo" alcohol; C14-C18 alkenylsuccinic acid, pentamethylene glycol, caprylic acid, and MeOH; C14-C18 alkenylsuccinic acid, triethylene glycol, caprylic acid, and MeOH; C10-C12 alkenylsuccinic acid, polyethylene glycol (300 mol. wt.), butyric acid, and MeOH; sebacic acid, tetraethylene glycol, caprylic acid, and C15-C19 "oxo" alc.

IT **142-62-1**, Hexanoic acid
(esters of, with glycols, **lubricants** for turbine engines)

RN 142-62-1 HCA

CN Hexanoic acid (8CI, 9CI) (CA INDEX NAME)



IT **124-04-9**, Adipic acid
(esters, with glycols, as **lubricants** for turbine engines)

RN 124-04-9 HCA

CN Hexanedioic acid (9CI) (CA INDEX NAME)

$HO_2C-(CH_2)_4-CO_2H$

IT **111-29-5**, 1,5-Pentanediol
(prepn. of)
RN 111-29-5 HCA
CN 1,5-Pentanediol (8CI, 9CI) (CA INDEX NAME)

$HO-(CH_2)_5-OH$

CC 22 (Petroleum, Lubricants, and Asphalt)
IT Glycols
(esters with dibasic acids, **lubricants** for turbine engines of complex)
IT **Lubricants**
(esters, of dibasic acids with glycols for turbines)
IT Acids
(hydroxy, esters of di-, **lubricants** for turbine engines of complex)
IT Esters
(of glycols, with dicarboxylic and monobasic acids, **lubricants** of)
IT 1-Hexanol, 2-ethyl-, esters of, with dibasic acid glycol esters
(**lubricants** for tubine engines)
IT 1,4-Butanediol, esters, with dibasic acids
(**lubricants** for turbine engines)
IT Octanoic acid, esters of, with glycols
(**lubricants** for turbine engines from complex)
IT **142-62-1**, Hexanoic acid
(esters of, with glycols, **lubricants** for turbine engines)
IT 107-92-6, Butyric acid
(esters, as **lubricants** for turbine engines)
IT 111-48-8, Ethanol, 2,2'-thiodi- 112-27-6, Triethylene glycol
(esters, with dibasic acids, **lubricants** for turbine engines)
IT **124-04-9**, Adipic acid
(esters, with glycols, as **lubricants** for turbine engines)
IT 111-20-6, Sebacic acid
(esters, with glycols, **lubricants** for turbine engines)
IT 107-21-1, Ethylene glycol
(**lubricants** for turbine engines)
IT **111-29-5**, 1,5-Pentanediol
(prepn. of)
IT 112-60-7, Tetraethylene glycol